

INTERSEXUALITY—SOME MEDICAL AND LEGAL ASPECTS

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AT the last meeting Professor Tappan said that he had been advised by an eminent legal authority to begin his lecture with a story. I thought this was a very good idea and so I shall begin with a story, a story which is true, and which, so to say, sets the stage for the discussion tonight.

There was a family that lived not very far from London, and this family had a little girl, and she was growing up as all little girls grow up. When she reached the age of four, her mother had become somewhat uncertain about the appearance of her external genital organs, and she was no longer quite sure that everything was right with her little girl. As you do when you live near London, she took her child to an eminent specialist in Harley Street, and the great man looked and shrugged his shoulders and said, "I do not know. I can tell you only if I operate and have a look inside." So the great man had a look inside, and then he came back to the mother and said, "All you have done in the past is wrong. This child is not a girl, it is a boy. So you had better change everything and bring the child up as a boy from now on." The parents were very reluctant to face the upheaval that this would cause in the community in which they lived, and so they decided to do what many English people do in these days—they decided to emigrate to Australia. They left London with a little girl and arrived in Melbourne with a little boy. For about twelve months everything went nicely, and then difficulties started again. The little boy began to go to school, and it became obvious very soon that he was not quite like other little boys. He could not pass his water as they did. He was even not very reluctant to demonstrate to his classmates that he was not a boy, that he really was a girl. What to do now? The parents could no longer go to Harley Street, so they went to Collins Street and saw another eminent

specialist. He said the same thing as his London colleague had said: "I do not know, I must have a look inside." So another operation was performed and tiny snippings were taken from the organs seen inside. That was when I came into the picture. I was shown the microscopic preparations, and sure enough they proved that this child has testes. So it seemed that the specialists' advice had been based on certain facts, but by this time the social problem had become extremely difficult. However, at this stage the parents had a stroke of luck; they met a young doctor who had recently come to their suburb and he gave them the right advice as we can see now. He said to them, "Forget all about the specialists' opinion and the microscopic findings, bring up the child as a girl as you did during her first four years, and the future will take care of itself." The parents decided to follow this advice, and as they could not go back to England now, they left one of Melbourne's northern suburbs with a little boy and arrived at one of the seaside southern ones with a little girl, and there she is growing up now, as far as I know, quite happily.

At the time of going to the press, another difficulty has arisen. The girl has made further progress quite in line with her class mates at school, but now it has been found that as her original registration as a girl was altered into that of a boy just prior to leaving England, it cannot be corrected now here in Melbourne. It does not matter much at the moment, but if the girl intends to get married one day, she might have to return to England in order to get the legal questions settled.

This is not just a story, but a true case history, and cases of this sort are more common than many of us think. The difficulties which arise in such cases are to quite an extent a matter of semantics. When, for example, a lawyer and doctor discuss a sex offender, or when a biologist declares that this animal belongs to the male or to the female sex, the word sex has quite a different meaning. Even on the biological side, the word sex has at least six different meanings. There is the anatomical, the gonadal, the genetical, the hormonal, the social and the psychological sex. Fortunately, in the ordinary human being all six usually show the same orientation, but what if there are differences? Take the case of a child whose external genital organs suggested that it was a boy, but when it died of pneumonia and we did an autopsy we found in its pelvis a uterus, tubes and ovaries. Is it now a boy or a girl? Another individual was

brought up as a woman. She has normal external organs of the female type. She has no breast development, and does not menstruate; if you would operate on her, you would find that she has neither testes nor ovaries. If you examined the cells of her skin you would find evidence that her genetical sex is probably male. Is she really a woman? A certain young man has external genital organs which have a perfectly normal male appearance. He has been brought up as a male and has the psychological character of a male, but he has breasts. The cells of his skin would suggest that his genetical sex is female.

It seems appropriate at this stage to give some details of the various forms of sex: anatomical, gonadal, genetical, hormonal, social and psychological. If we speak of the anatomical sex we have in mind the structure of the external genital organs, the development of breasts, the distribution of hair and the pitch of the voice. Gonadal sex is concerned with the structure of the gonads, that is the presence of an ovary or of a testis or on occasion of both. When we speak of the hormonal sex it is as well to keep in mind that the formation of male and female sex hormones is not confined to male or female individuals respectively. Males and females produce both kinds of sex hormones, but in definite proportions, and it is the disturbance of this proportion that may give rise to important modifications of certain sex characteristics. The social sex is that to which we have been assigned and to which we belong in the eyes of our fellow citizens. The psychological sex is the one to which we ourselves feel we belong or ought to belong.

With regard to the genetical sex it has been only during the last decade that means of determining it easily have been developed. In 1949 Barr and his co-workers¹ first showed that the nerve cells of female cats contained a peculiar chromatin clump in their nucleus usually just underneath the nuclear membrane, and that these clumps were absent from the cells of male cats. It has since been found that these clumps can be found in many kinds of mammalian cells, that they can be seen in over 60 per cent of the cells of female individuals, but that they occur only in a very small proportion of male cells (Fig. 1). In addition, Davidson and Smith have shown that there are also differences in blood cells. A certain class of the white cells having a nucleus consisting of a number of lobes often have a

¹ Barr, L. M., and Bertram, E. S., *Nature*, 1949, 163: 676.

small accessory lobe which looks like, and has been called, a drumstick (Fig. 2). This occurs only in females. It has in this way become quite easy to determine the genetic sex from blood films or from smears of the oral or vaginal mucosa, and a fair number of cases have already been found where the genetic sex seems to contradict some or all of the other forms of sex that we have been discussing.

Since the early days of medical literature, reports have been published, in ever-increasing numbers, of patients in whom the anatomical and the gonadal sex, the only two forms recognized in the past, seemed to be in conflict. In 1908 Neugebauer collected more than 2,000 cases from the literature and divided them into three groups—the true hermaphrodites, the male pseudo-hermaphrodites, and the female pseudo-hermaphrodites. In the first group both testes and ovaries, in the second testes, in the third ovaries, were present, together with a mixture of male and female features in the appearance of the external genital organs. This classification has now been superseded by modern concepts but as a rough guide it still has some usefulness. It has become clear that the first and second group are due to a fundamental disturbance of sex determination and differentiation, while the third group is of a very different kind. Very recent research work has led to the conclusion that most individuals in this group are fundamentally quite normal females who are suffering from a disturbance of the hormonal aspects of sex only. The mechanism of this disturbance is very briefly as follows. The adrenal gland is one of our most important hormone-producing glands. Like similar organs, such as the thyroid and ovary, it stands in a particular relationship to the pituitary gland. The pituitary secretes hormones which stimulate the adrenal to produce its own hormones, but when this production reaches a certain level a kind of "feed-back" mechanism operates and the adrenal hormones act as a brake on the further production of stimulating pituitary hormones. In this way the body is able to maintain a sufficient but not excessive level of any one hormone. In the case of a female pseudo-hermaphrodite, there is a block in the chain of reactions which leads to the formation of one of the most important adrenal hormones, namely cortisone. No cortisone is formed; the intermediate products are directed into other channels and form predominantly 17-ketosteroids, substances which act as strong male hormones. As no cortisone is formed the "feed-back" method of inhibiting



Figure 1.—Photomicrograph of a cell showing the central dark nucleus containing a peripheral black dot or clump of chromatin characteristic of the female.

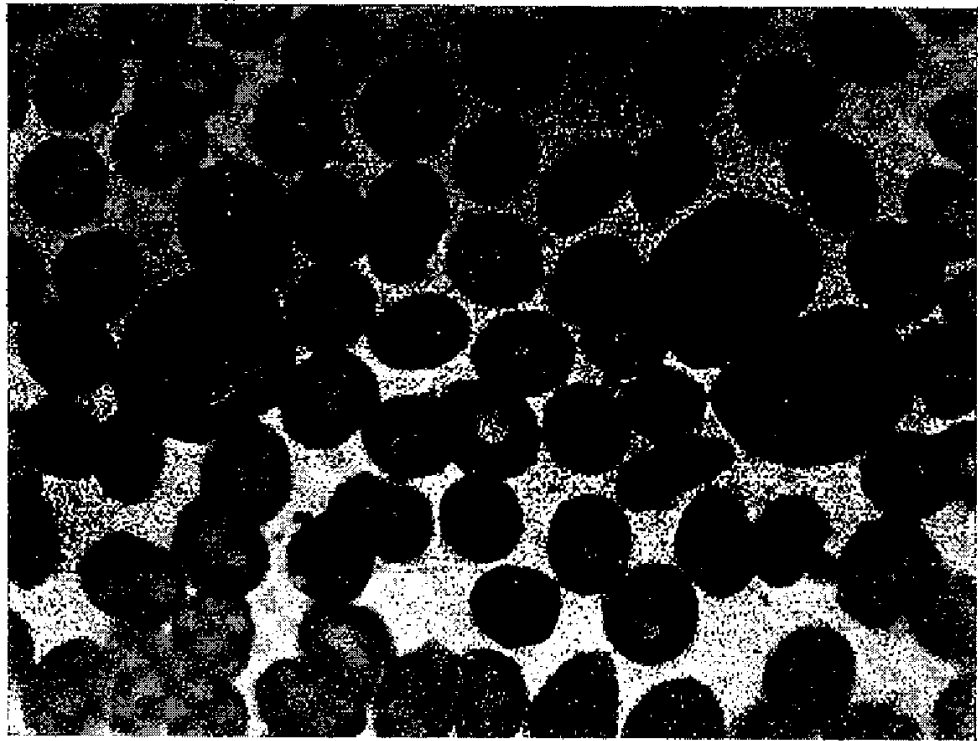


Figure 2.—A blood smear showing three nucleated or white blood cells. The “drumstick” accessory lobe indicative of the female is seen just to the right of the main nuclear mass of the uppermost of these cells.

the pituitary does not operate, the stimulating hormones continue to be secreted, indeed at a higher level, and they maintain therefore a high production of the abnormal male hormones by the adrenal. The body of such a patient undergoes a considerable amount of masculinization, sometimes to such an extent that such children are unhesitatingly brought up as boys. But the ovaries remain ovaries even if their function is hindered.

We are now in a position to alleviate this condition to a remarkable degree. If we give these patients cortisone in tablet form we will achieve two things: first, we are making good the deficiency of the adrenal glands with regard to cortisone production, and secondly, we are supplying the "feed-back" mechanism to the pituitary. The pituitary will therefore stop secreting large amounts of stimulating hormone, and therefore the production of excessive amounts of 17-ketosteroids will drop considerably. The features of masculinization will disappear to a very large extent, and proper feminine traits will become apparent. Such a patient can live the life of a normal female except that she must take her tablets for the rest of her life.

The other two groups, true hermaphrodites and male pseudo-hermaphrodites, belong together. We are using now the term intersex for them and we speak of intersexuality because they really stand, as I hope I will be able to show you, somewhere between the normal male and the normal female. As the origin of their deviation lies in the earliest stages of sex determination and differentiation, it is necessary to discuss these concepts briefly. We all know that sex determination occurs at the moment of fertilization, but what does actually happen, how do we become male or female? My medical colleagues will forgive me if I recapitulate for our legal friends a chapter of our medical textbooks, but I promise I shall add some information that is not contained in them. The main structure of the nucleus of a resting cell, as revealed under the microscope, seems to be a network of fine filaments which we call the chromatin network. When a cell divides this chromatin network breaks up into chromosomes, short or long rod-shaped bodies which usually occur in pairs and in constant numbers for each species. Human beings were always regarded as having 24 such pairs, but according to the most recent investigations it now appears that we have only 23. The chromosomes are the carriers of the genes, and on these genes depends what we inherit from our parents and what we pass on to our children. Every pair of

chromosomes consists of two equal partners, but there is one exception. It concerns the pair called "X" which is responsible for the sex determination. In males, the members of the pair are unequal: one is of the same size as the corresponding pair in females, but the other is very much smaller and it does not contain the same set of genes as its partner. As this is the only sex difference on the cellular level we speak of a male as an XY and of a female as an XX. When cells divide, the chromosomes split lengthwise in half so that each new cell obtains the same number of chromosomes as the parent cells with the same complement of genes. This is true for all somatic cells and for most of the divisions of sex cells but here again there is one exception: just before the final spermatozoa or ova are formed, for once no splitting of chromosomes occurs when the cells divide. The mature ova and spermatozoa contain therefore only half the number of chromosomes that ordinary cells contain (this "reduction division" is necessary as otherwise the cells of the new individual—ovum plus sperm—would contain double the normal number of chromosomes). All ova will therefore contain one X; one half the spermatozoa will also contain one X, but the other half will contain the Y. Depending on what sort of spermatozoon fertilizes the ovum, the new individual will have the formula XY or XX with a result that is male or female respectively. Now, this is as far as the medical textbooks go, and to stop at this point has always been to me most astonishing.

To what extent the Y chromosome contains genes that are concerned with sex determination or sex differentiation is still uncertain, and its significance is possibly different in various species. We can therefore regard a male as one X and a female as two X, and as all the X chromosomes contain the same genes, the question should have been asked long ago, How can one set of factors produce something so completely different from that which two sets of the same factors produce? It is not really so that this question has never been asked; the biologists asked it long ago and have found the answer to it, but for some most peculiar reason the question and the answer have never come into the medical textbooks and the discussion of sex determination in medical books always ends on the XY and XX level. What really happens is this. The X chromosome contains a factor or factors for femaleness (F). Factors for maleness are contained either in one of the other 22 pairs of chromosomes

or else the whole set of other chromosomes (often called autosomes) acts in determining maleness (M). The formula XY of a male then becomes FMM, and that of a female FFMM. If we now assume that the strength of the female factor is somewhat greater than that of the male factor, then we have the solution we are seeking. If we substitute for F and M arbitrary figures for easier calculation (the actual relationship has been worked out for a number of experimental animals) we see that the formula FMM gives a preponderance of maleness and the formula FFMM a preponderance of femaleness (Fig. 3). The

ONE "X"	Two "X"
FMM $F = 40$ 40 : 60 = Male	FFMM $M = 30$ 80 : 60 = Female
F'M'M' $F' = 60$ 60 : 90 = Male	F'F'M'M' $M' = 45$ 120 : 90 = Female
<i>Crossbreeding:</i>	
F'MM 60 : 60 = Hermaphrodite	FFMM' 80 : 75 = Hermaphrodite

Figure 3. Maleness and femaleness in the production of normal and hermaphrodite individuals. (See text)

same can be done with another set of figures of similar proportion, F'M'M' and F'F'M'M', without any problem, but if we were now to cross individuals of a race with the first set of values with others from a race with the second set of values we could arrive at individuals (bottom series, Fig. 3) with no clear-cut preponderance of maleness or femaleness. This is not just idle speculation with pencil on paper, for already, more than twenty-five years ago, Goldschmidt has carried out experiments crossing a Japanese and European race of a certain moth. Each race bred true in itself, but when crossed all degrees of intersexuality could be obtained at will.

I do not want to go into any more biological detail but the point I wish to make is this: we are males or females not because we have only this or that set of factors. We all have male and

female factors in our genetic makeup, and we are one or the other sex because the genic "balance of power" tips in this or that direction. Those individuals, however, in whom the preponderance of the one set of factors over the other is not great enough are genuine intersexes; they form a group in their own right. In this group, the gonads lose the role they have hitherto held as the supreme criterion as to which sex an individual belongs. We know that in intersexuality an ovary can during embryonic development be transformed into a testis and *vice versa*; we know that persons who have no gonads at all have anatomically mainly female characteristics, although their genetical sex is often male. On the other hand, young men of the type I mentioned earlier have quite often the female genetical sex. If we realize this most important fact, that an intersex is not just a malformed male or female, but that intersexuality is a condition in its own right, differing from the usual maleness or femaleness on the basis of a different equilibrium of certain genetic factors, we will find the right clues for the management and treatment of such cases.

We realize that we have to assign them either to the male or to the female sex as these are the only ones which the laws of our community recognize. However, the distinct advance that has been made in recent years is the recognition of the fact that no one of the six types of sex has any greater claim to be the decisive one than any other. How this assignment to a social sex is best done in practice I shall explain in detail, but before I do this, it might be useful to cast our eyes back into the past for a moment to see how previous civilizations have dealt with the problem.

Let us begin with the South Sea islands. A statue which was found in New Ireland does not represent the commonest form of hermaphroditism but a form which has been preferred by artists throughout the ages, because the combination of female general body contours and female breasts with the presence of a penis makes it easiest for the artist to convey his idea. The discovery is of considerable interest not only from the point of view that the representation of hermaphroditism can be traced back in this way to Stone Age culture but also because hermaphroditism still plays an important role in the life of the Islanders today: an hermaphrodite pig is one of their most treasured possessions. Greek sculptors have left a large number of statues of hermaphrodites to posterity. Detailed examination

of them raises a number of interesting points. First of all, it becomes clear that these statues are not just products of the fantasy of the sculptors but that they must have actually known such individuals. Some of the statues show anatomical details which are surprisingly correct. The fact that great artists thought it worthwhile to create such statues gives us an indication of the attitude of Greek civilization towards this condition, and its very name is further proof of this attitude. Hermaphrodites is the child of Aphrodite, the goddess of beauty, and of Hermes, the most handsome of the gods. There is an old Greek legend according to which the human population consisted originally of three races—males, females and hermaphrodites; and the latter were regarded as far superior to the other two. This high esteem in which hermaphrodites were held did not last into the Roman civilization. A newborn baby that showed this malformation of its external genital organs suffered the same fate as all other malformed babies did: it was drowned in the next river. In the old Jewish texts, for example the Talmud, there are often rules and regulations for males, females and hermaphrodites. Special laws regarding inheritance from and by hermaphrodites are listed. In the Middle Ages hermaphroditism is no longer a subject for artists. A few drawings of such individuals which have been preserved indicate that the knowledge of the naked human body and its details was no longer as universal as it was in the era of Greek civilization, and one particular condition, of which I possess an illustration, I have never found recorded in the current medical literature, nor had I seen such a case myself until very recently when I met with one in an aboriginal girl in Fiji. However, the general attitude towards hermaphrodites was still reasonable. They were free to choose the social sex in which they wanted to live and only a change of mind in this regard was frowned upon. It is of interest that only two professions were barred to them—those of Judge and of Chancellor of a University. In more recent times the French seem to have discovered that hermaphrodites could be particularly attractive sexually, as some paintings indicate. In our own times, a few artists still see hermaphroditism as a subject for their creative work. There is a long poem by an American and a rather mystic novel by a French writer. A number of oil paintings having a hermaphrodite as the central figure was exhibited in Melbourne University a few years ago. Some hermaphrodites have even found that they could make much money out of

appearing on cabaret stages, but on the whole the lot of the hermaphrodites has deteriorated very much indeed since the microscope was invented and surgical interventions became relatively harmless procedures. When it became possible to obtain small samples of internal organs and to examine them microscopically, it was the possession of testicular or ovarian substance, even if very incompletely developed, that made an individual a man or a woman. This idea has made hermaphrodites, as one of my patients called herself, "sullen freaks", and has brought untold misery to many of them. Here is a case report which was published not long ago in an American journal. A woman in her late twenties was said to have lived a very full social and sexual life. One day she was operated on for a hernia and in the sac a testis was found. Her medical advisers and her friends agreed that she had been guilty of the "ghastly crime of homosexuality" and that the only way to redeem herself was to have the other testis removed which could now be found on the opposite side. It is impossible for me to understand this reasoning and the basis for this advice, but it was accepted. The result was utter misery. Severe castration symptoms occurred (somebody seemed to have forgotten that the testis produces not only male but also large quantities of female hormones). Depression and extreme feelings of guilt completely ruined the life of this woman, who had been described as a "brilliant female".

If we turn now to the management of cases of intersexuality, the guiding principle is that none of the six forms of sex referred to above is of decisive importance when not all six are orientated in the same direction. In such a patient it matters little whether an ovary or a testis is present, and we should always keep in mind that it is the medical practitioner's task to alleviate, not to aggravate, the difficulties his patient may encounter. We owe a debt of gratitude to the members of the Johns Hopkins School of Medicine in Baltimore for having worked out, on the basis of a large number of very careful observations over quite a number of years, a definite plan for the management of intersexuality, and it is gratifying to see that this plan is gaining general acceptance. Let us assume first of all that the question arises in what sex a newborn child should be registered. In such a case the Registrar of Births should be advised of the birth of the child and of the encountered difficulty. Further information, it should be added, will be supplied as soon as it is available. The child should be admitted without

delay to the Royal Children's Hospital or to a similar institution where all necessary investigations can be done. The chances are about nine to one that such a child is not an intersex on the basis of an abnormal balance between genetic factors but an example of the adrenogenital syndrome, the condition which, as explained before, is due to a hormonal block in the adrenal cortex. This can be proven by estimating in the urine the excretion of 17-ketosteroids and of pregnanetriol and by determining the presence or absence of the sex chromatin in appropriate cells. Such a child will be registered as female and will develop under perpetual cortisone therapy into a normal female.

If there is no increased hormone excretion in the urine, and if the sex chromatin is absent, the child is likely to be a case of genuine intersexuality. The fact that it probably has testes does not mean that it has to be registered as a male. A vagina and a uterus might quite well be present in such cases. The decision here rather rests with the plastic surgeon. If he thinks the external genital organs can be moulded more easily and successfully into a functional male or female form, the social sex is chosen accordingly. Let me stress it again: as these individuals are genuine intersexes there is no fundamental objection to their assignment to either sex. In such cases our American friends tell the parents that "nature had not quite finished the child", that they, the doctors, have done it now, that the child is a boy or a girl as the case may be. To tell just that and nothing more is of the utmost importance. The child must be brought up by the parents unhesitatingly as a boy or as a girl. Any doubt in the parents' minds sooner or later causes disturbances in the mind of the child.

The same rules of management apply if children present up to the age of one year or one and a half, but after this time it becomes different. Very extensive psychological studies have shown that our behaviour as males and females depends in the first instance to a remarkable degree on whether the ribbons on our baby clothes were pink or blue. Therefore from the age of about two and onwards every attempt should be made to avoid a change of the sex in which a child has been registered. This view is so strongly held and so well supported by evidence that it is even recommended not to change the sex of children who belong to the adrenogenital syndrome but who have been brought up as boys. It is better to do corrective operations if

necessary than to change their sex, because it is most unlikely that they will settle in their new role.

Adolescents and adults who wish to belong to one sex but realize that they have a certain physical feature of the other should be helped by medical and surgical means to become as nearly and as completely a man or a woman as is possible, even if it means a change of social sex. In this group the psychological sex is the decisive factor. A word of warning is necessary here. On account of publicity in certain newspapers, neurotics and other people with mental disturbances are approaching medical practitioners in increasing numbers often with very peculiar requests for change of sex and sometimes even for castration. It is therefore absolutely essential, in the investigation of the older patient, to enlist the help of a skilled psychologist, and only when all the investigations show that it is a case of intersexuality should management along the lines just explained be undertaken.

Remarkable progress has been made within recent years in the approach to the problem of intersexuality. The "supremacy of the gonads" has gone, but there is a definite danger at the moment that another feature, the presence or absence of the sex chromatin, may take its place. I wish to stress, therefore, once more, that only the integration of the results of all possible investigations will lead to the right management of intersexuality.

Discussion

MR. JUSTICE BARRY said: It rarely happens that one has the pleasure of hearing a speaker present a difficult subject with such lucidity and mastery as Dr. Bettinger has shown tonight. We are the more indebted to him because during this week he has been very far from well, and only the necessity of fulfilling the engagement so that members of the Society would not be disappointed brought him from a sick-bed on this evening. But I should like to say to Dr. Bettinger that rarely have I had the same satisfaction as I have had this evening in hearing his admirable exposition.

Having been apprised by Dr. Bettinger a few days ago of the nature of his paper, I engaged in a search of the law books to find out whether there was anything in them relevant to the subject. Time and the pressure of other duties did not allow me to search as fully as I should have liked, but I found very

little to help me. Indeed, the only case that I could find in which the question whether a person was a man or a woman arose was *Da Costa v. Jones*, 2 Cowper 729. In that case the sex of a well-known figure in London society, the Chevalier d'Eon, was in issue in an action that came before Lord Mansfield and a jury in about 1771. The Chevalier was a military officer with certain feminine characteristics, and London society having in those days apparently nothing better to do than speculate on the affairs, and particularly the intimate affairs, of its members, the sex of the Chevalier d'Eon became a matter of discussion about the clubs, and there were substantial bets made between persons who held differing views on the subject. An action was brought to recover a wager, and evidence of highly personal details relating to the Chevalier was given by physicians and personal servants. The jury found that the Chevalier d'Eon was a woman. Later the Court of King's Bench held that the action was of a scandalous kind, and that the courts should not, as a matter of public policy, entertain it, and the plaintiff derived no legal benefit from the verdict. The Chevalier left England but after living in France for some years, returned to England, and when he died (it is said about 1810) a post-mortem examination revealed that he was a male.

The Jewish code and the Roman law made some provision concerning the status and property rights of hermaphrodites, but our law does not seem to have troubled itself with the question. It appears in Coke on Littleton, 8a 29b, that if a question should arise concerning the right of inheritance of an hermaphrodite the individual would be "heir, either male or female, according to that sex which prevails". I think that is the law's present attitude and that it may be taken that the law recognizes only two sexes, male and female, and is unlikely to be disposed to enlarge the categories by adding a third sex. That is probably due to the fact that the law is an extremely blunt instrument. The primary purpose of the law is to ensure stability in society. It is all to the good if, occasionally, the assumptions of law happen to accord with scientific conceptions, but if they do not, that may be unfortunate, but it is a consequence of the function which the law has to discharge. Society has to be run as a going concern, and the refinements that belong to the scientific mind occasionally are too elusive to be translated into the social management of the community. Accordingly, I think that at the present stage of social develop-

ment, although the position might well alter under population pressures and different attitudes to birth control and fecundity, we must recognize that male and female are the two categories into which, from the standpoint of legal organization, human beings must fall. It is extremely interesting, however, to learn from Dr. Bettinger that present scientific knowledge reveals that there can be human creatures who do not possess dominantly the characteristics of either the male or female sex.

Of course, that brings us to the question, what are the characteristics of the male and female sex? It is plain from what we have learned tonight that possession of apparent primary sexual characteristics does not determine the question. It is clear that the psychological orientation of a human being will not enable us to say whether he is male or female. The courts, if they were confronted with the need to decide the matter, as conceivably they might be, would, I think, decide the matter as a question of fact. In the decision of that question of fact they would seek to have reference to the best available scientific knowledge of the time. Scientific knowledge is never absolute, and what is the best scientific knowledge available at the moment may be the discredited heresy of ten years hence. Indeed, one gathers from what the lecturer has told us tonight that some of the significant knowledge in the field which he has discussed belongs to so recent a period as 1950. If the law were confronted with this situation it would have to decide it as best it can on the most satisfactory evidence then available to it. This, of course, is not unusual; it is a normal feature of the legal process. For example, at one time the question of pregnancy, if it became of legal importance, as with a woman condemned to be executed, was determined by a jury of matrons. If a female was sentenced to death and pleaded her pregnancy, then the direction of the Court was that she should be examined by a jury *de ventre inspiciendo*, and a jury of matrons was empanelled for the purpose of determining whether the female was quick with child. That was the best method the law had available to it in years gone by, but later that method was abolished by the Juries Act, which now provides that such a question is to be decided by the evidence of medical practitioners.

Similarly, if it ever comes to a question of deciding whether a human being is a male or a female, I imagine the law will seek to determine it in the light of the available scientific

evidence upon the question. Now, that, of course, does not mean that all the relevant scientific knowledge will be brought before the court, because if it is a civil matter the only material presented will be the evidence of witnesses called by the parties to the case, and if the matter is a criminal matter the material will consist of what can be adduced having regard to the exigencies of conducting and completing a criminal trial within the period limited by the fact that the tribunal consists not of a judge alone but of a judge and jury.

Conceivably, the matters discussed by the speaker tonight might become highly relevant. For example, a charge of an act of gross indecency with a male person might become difficult of decision if the allegation is made that the partner in the act is a true hermaphrodite. Similarly, if the charge is an indecent assault on a female, then if the allegation is that the apparent female is a true hermaphrodite some unfortunate judge may be confronted with the anxious task of charging a jury upon a matter which, if he does not happen to have the good fortune to be here tonight, may never have occurred to him before.

From the legal point of view there are two possible aspects of the matter. The first aspect arises where there is uncertainty as to the sex of a child; the second, where the person is genuinely an hermaphrodite not capable of being assigned definitely to one sex or the other.

In relation to the first aspect, three points arise. Firstly, registration of the birth must be made, but the difficulty of this might be reduced by the fact that notification of the birth can be given and registration deferred to the end of the first year of the child's life, by which time the difficulties of identifying the sex may have been resolved. Secondly, the child has to be assigned a name and, with few exceptions, the name implies the assignment of the child to one sex or the other. Doubts have been expressed as to the right of the individual to change his baptismal name, but I think there is probably no real legal obstacle to the changing of both Christian names and surnames. Thirdly, there is the matter of the upbringing of the child. This is a matter with which the law might be concerned if the courts had to deal with the custody of the child.

The second aspect of the problem was likely to be dealt with in the law by assigning every person to one sex or the other, and it is probable that in making this assignment the law would rely on an anatomical or gonadal test. The exclusive

use of such a test might not be scientifically acceptable and might be individually mischievous, but the law's primary task was to formulate rules for the general management of the community.

MR. A. L. TURNER said that the phenomenon of change of sex could also create difficulties in the divorce court. In a case in which one spouse had undergone such a change the court would be obliged to decide whether the marriage was the marriage of a man to a woman, whether the supervening circumstances had in some way rendered it a nullity and whether, without dissolution of the marriage, the parties were free to marry without committing bigamy.

Problems could also arise in relation to inheritance, where, for instance, a class of beneficiaries might be identified by sex. Further, succession to titles might give rise to difficulties.

DR. W. S. RICKARDS said that the personality of the child would be permanently influenced towards one sex or the other by his earliest upbringing by his parents. This made it important that the parents should from the start be given an understanding of the problem and as much reassurance as possible. The crucial thing was the early experience of the child in relation to its parents. If this experience were governed by intelligent thought all would go well until adolescence. Later life presents a more difficult problem.

MR. R. M. EGGLESTON said that the paucity of recorded legal consideration of this problem probably resulted from the fact that up to the present time the community had always assigned every person to one sex or the other. Now that it was realized that there could be indetermination or change of sex, the law might be compelled to formulate rules to solve the problem of whether a particular person should be regarded as a man or a woman. If it were necessary to decide whether a person was a son or a daughter in order to know whether he or she was eligible to receive a gift, he thought that the problem would not be solved by anatomical criteria as Mr. Justice Barry had suggested, but by the assignment by which the person's life had hitherto been regulated. It was possible that different solutions might be applied to different problems, so that some were solved by physical tests and some by reference to social tests.

DR. E. G. COPPEL said that a difficult problem might arise in relation to succession to property if a gift or settlement were worded, as commonly happens, so that an interest in property vested in a male child at birth but did not come into the child's possession until many years later. If at birth when the interest vested, the child were male according to whatever test might be accepted by the law, it would seem that that child would take the gift when it fell into possession and the circumstance that at the later date the child would be adjudged female would be irrelevant.

PROFESSOR D. P. DERHAM said that it had occurred to him that Dr. Bettinger had spoken with two voices—the voice of a scientist and the voice of a member of a community accepting a dichotomy of the human race into male and female. Possibly the voice of the scientist alone would say that there was a continuum with male and female at its two extremes. Such a continuum was not a succession of categories, much less two distinct categories. This approach suggested that the identification of female cells by the attributes which had been described assumed a dichotomy by classing some persons as female.