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# *Hermaphroditism,*

*From a Medico-Legal Point of View.*

*American Thesis*

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# HERMAPHRODISM,

FROM A MEDICO-LEGAL POINT OF VIEW.

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## A THESIS

PRESENTED TO THE FACULTY OF MEDICINE, PARIS, 1874,

FOR THE DEGREE OF DOCTOR OF MEDICINE ;

By BASILE POPPESCO.

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*Translated from the French,*

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1875.





TO  
THE STUDENTS OF RUSH MEDICAL SCHOOL,  
SPRING TERM, 1875,  
WHO PATIENTLY LISTENED TO HIS  
FIRST LECTURES,  
THIS LITTLE BOOK IS RESPECTFULLY INSCRIBED,  
BY  
THE TRANSLATOR.



HERMAPHRODISM

NOTE.

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My motive in translating this interesting thesis, has been to make known more generally some additional and confirmatory facts bearing upon a rare subject. If I could hope that my work has been done acceptably, my object is fully accomplished.

EDW. WARREN SAWYER.

655 COTTAGE GROVE AVENUE,

CHICAGO, SEPTEMBER, 1875.



# HERMAPHRODISM.

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## INTRODUCTION.

The vices of conformation of the genital organs had from all time attracted the notice of observers ; but the absence of positive knowledge of the normal anatomy and pathology, to the middle of the eighteenth century, permitted the ranging of these facts, which were much more in the domain of the marvellous and unknown, in a special category, rather than in the true domain of science.

It was only at the end of the last century, and the beginning of this, that numerous works appeared, which partly elucidated the subject and enabled us to penetrate the infinite modifications of its mechanism. However, it was necessary to wait for the recent discoveries of modern anatomy, and the labors in embryology, in order to affirm that the question of hermaphrodisism was nearly solved.

The medico-legal questions, which are attached to this arrest of development, can be treated now with an indisputable competence, before the tribunals ; because, the medical jurist has as a base for his argumentation, and foundation for his declarations, the entire group of phenomena amassed from embryology and observation.

Prof. Tardieu, in his lectures, and in his works, is one of those who have contributed most to elucidate this subject, and to show all its practical bearings from a

medico-legal point of view. We have thought that, in the present state of science, a summary of the principal questions which belong to hermaphrodisism would not be deprived of all interest; but in attempting to overcome the difficulties of the subject, we feel constrained to beseech of our judges all the kindness possible.

#### HISTORY. VARIETIES, CLINICAL AND SYMPTOMATIC.

The origin of this word goes back to the remotest antiquity, and seems to be attached to the fable of Hermaphrodite, son of Mercury (*Ερμῆς*) and of Venus (*Ἀφροδίτη*), who remaining insensible to the charms of the nymph Salmacis, she obtained from the gods the decree that her body might be united to his.

Later, the possibility that an individual could at once possess the attributes of both sexes was fully admitted, and already the Fathers of the church, Tertullien among others, were seen violently opposed to them; and if the Athenians threw the reputed hermaphrodites into the sea, the Romans did not hesitate to employ the same kind of execution by precipitating them into the Tiber.

In the middle age, ignorance and passion still follow these unhappy individuals, disinherited from nature; and we will be able to recall, in this connection, numerous decrees of the provincial parliaments.

In the rigorous acceptation of the word, one will understand an hermaphrodite to be an individual, who is capable of reproducing one of his species without the concurrence of another. This will be, in the animal kingdom, an exceptional peculiarity, which will enable us to establish a complete similarity with that which commonly passes in the greatest number of vegetable families; one class only in the vegetable kingdom, the *Diœcia*, constituting an exception.

In the animal kingdom, as one descends the scale, there appear animal hermaphrodites; thus, for example, among

the mollusks, and the zoöphytes ; but here still a distinction should be established ; although possessing male and female organs, among some species, (the concha univalvata, for example), the animal requires, in order to be fecundated, the intervention of another individual of his kind ; in this case, the animal is at once fecundating and being fecundated.

On the contrary, take the concha bivalvata, and one will admire at once with what care and harmony the laws of nature have been established, in order that the fecundation of these creatures, their unceasing repetition, may not be interrupted ; for here the animal has a fixed domicile, permanent ; it is impossible for him to leave his rock ; in the act of fecundation he has no need of the help of another individual of his kind ; he is at once fecundating himself and being fecundated.

I will not extend farther these considerations of comparative anatomy ; I only wish to show the insensible gradation that one meets with in the attentive observation of nature ; at the same time to show what an immense distance separates the bisexuality of the inferior animals from this, that has always been termed in man, *hermaphrodisism* or *androgynia*.

As M. Tardieu has remarked,\* “the name of hermaphrodite, under which one usually designates these individuals, is the worst that can be chosen, and gives the most false idea of their conformation.” One may say that it is not important which may be the predominant sex, the one or the other ; often, even, both are too incompletely developed to be able to fill their rôle ; the association has never, however, been perfect ; it is scarcely so in two or three recent observations where the simultaneous presence of the essential and accessory organs of the male and female sex have been established ; I will make, however, an exception in favor of an observation

\* Question médico-légale de l'indentité dans ses rapports avec les vices de conformation des organes sexuels, 1874.

reported by M. Doumic,\* quoted by Dr. Heppner, of St. Petersburg, also for two other observations which are found at the end of this thesis; one taken from the journal *Lo Sperimentale* of Florence (1874), the other from the *Lyon Médical* same year.

Haller, † relying on the considerations of structure, had already said, that the union of the two sexes was absolutely irreconcilable with the conformation of the pelvis; and later, Meckel, and Serres especially, really corroborate this opinion in taking for the base of their refutation the law, called by the latter, the law of the equilibrium of the organs.

In the last century, the authors were divided into two parties, regarding the sex of the presumed hermaphrodites: one, with Oslander, thought that they were nearly all males, while Parsons‡ and Hill, on the contrary, supposed them nearly all females.

To-day, the almost unanimous opinion is, that in the great majority of cases that are wrongly called hermaphrodites, they are individuals of the male sex in whom the testicles have descended and are atrophied, or rather, on the contrary, remain included within the cavity of the abdomen; in whom a penis is recognized, having an incomplete development; a urethra more or less opened at the base of the penis; finally, a failure in union of the two lateral parts which had as their special destination, on account of their approaching each other and their intimate adherence, the forming of the superficial coverings of the pouches, the scrotum, strictly speaking. In a word, the arrest of development which constitutes, strictly, hermaphrodisism, consists essentially in two special alterations of the external and internal genital organs, which have been designated under the name of hypospadias and cryptorchidia; as M. Tardieu does

\* Doumic, Gazette Med., Paris, 1872.

† Comm. Soc. R. Gott., t. 1, pl. 1.

‡ Parsons' Medical and Critical Inquiry into the Nature of Hermaphrodites. London, 1741.

not hesitate to say, "that one will not be in doubt that these are malformed men, but men." The same opinion is equally supported by M. Legrand du Saulle in his *Treatise of Legal Medicine* (1874).

Nevertheless, though the arrest of development in the male sex constitutes the greatest part of the facts in science under the name of hermaphrodisism, we will describe, after the authors, the three most important varieties; we believe this division necessary, not only because we will be enabled better to group the facts, but because it accords with the observation and with the minute description given by Is. Geoffroy Saint Hiliare, Dutrochet and Marc.\*

#### I. APPARENT HERMAPHRODISM IN THE MALE SEX.

Sometimes the arrest of development involves only the generative organs, sometimes there are phenomena worthy of being spoken of which belong to the general configuration of the individual. We will first describe the former, or phenomena localized in the generative sphere, properly speaking.

The penis offers, usually, an incomplete development; its length is more or less reduced; it is formed by the union, the fusion of the two corpora cavernosa; the glans is often malformed; moreover, if it exists it remains uncovered, in consequence of the absence, or the want in length, of the prepuce. One will readily admit that, if the volume of this organ is very slight, not exceeding in length two-thirds of an inch or an inch, it may sometimes be difficult to distinguish it from the clitoris, if besides there are added to this other vices of conformation. This penis is capable of an erection, and the intromission of the organ will depend directly upon the length which it can acquire at the moment of venereal spasm.

\* Dict. en 30; Art. Hermaphrodisme.

Below this penis, one recognizes a deformity also very important; we allude to that arrest of development which has received the name of hypospadias. There are a number of varieties of this; sometimes the urethra is opened at a point very nearly approaching the terminal extremity of the penis, and then it is not a true hermaphrodisism; sometimes, on the contrary, it is only towards the middle of the penis that a canal is observed which opens directly into the bladder; finally, the most frequent variety is that, in which an opening is found quite at the base of the organ, the orifice of which is just beneath the pubis, in an infundibuliform cavity which we will describe presently.

In this case, one observes also the co-existence of other arrests of development. We know that the scrotum is the result of the intimate union of the two lateral folds, which unite in the median line and form a well marked raphe, that corresponds superiorly to what is known under the name of the septum of the dartos. When this union of these lateral folds does not take place, and these two external processes from the blastoderm remain separated, there will result an absence of the scrotum, and each side will have the gross appearance of the labium majus.

These two separated parts leave on the median line a fissure, which extends from before backwards; sometimes this is very superficial, sometimes, on the contrary, it is a true hollow cavity, more or less funnel shaped. This cavity does not extend very far forward, the finger is soon arrested, and at the anterior and superior part one can recognize the abnormal opening of the urethra. If it is wished to carry the examination farther, the catheter may be introduced nearly into the bladder and the finger into this abnormal cavity, when the presence of the prostate, and even the vesiculæ seminales, will be demonstrated; most frequently, however, it will be nearly impossible to arrive at such precision in the diagnosis,

the cavity being too shallow and the rectal touch giving but very uncertain information.

But a fact which leads still more to the confounding of the external conformation of these subjects with the special conformation of the female sex, is the absence of the testicles, or, at least, their permanent inclusion within the abdominal cavity. It will be understood how necessary it is in these cases to practice a delicate palpation; because, the absence or presence of these organs indicates more exactly, for the medical jurist, and for the expert, the course which he will follow in the decision which is necessary for the proper ranking of this individual in the civil state; or the motives which he can allege in favor of a rupture of the marriage.

Not only the lateral pouches which represent the scrotum ought to be examined, but the inguinal ring and the entire inguinal tract should be explored; because, it is not exceptional to find, in those cases of presumed hermaphrodites, the testicles retained within the inguinal canal, from which their descent does not take place till the epoch of puberty. Finally, one should recall the interesting case of Alexina B—, reported by Prof. Tardieu, in whom the testicles were retained within the inguinal canal, and were the seat of a most violent congestion at the time of puberty, which was, for the physician, the first indication of a vice in conformation presented by this presumed young girl.

Moreover, in the variety of hermaphrodisism with which we are occupied at present, the most frequently observed, one can say that the principal characteristics are comprised in the following observations: diminution in the size of the penis; hypospadias, generally well marked; absence of union of the two lateral parts which normally go to form the scrotum; and finally, cryptorchidia.

To these local signs of hermaphrodisism, may be added a series of phenomena which belong to the general conformation of the individual; and often, too, not only are

the external physical characteristics similar to the female exterior, but the real character, the habits, the passions, conform to the female sex rather than to the male.

The stature is generally medium; the rotundity of body (*l'embonpoint*) is considerable; the skin is smooth and fine, deprived of hair upon the face as well as upon the trunk; the muscular system is slightly developed, or rather it is marked by a full adipose development; the muscular projections and the bony ridges are effaced; the extremities, in a word, like the face, have the appearance of the feminine type; the voice even has a high pitch, and is feeble; the pelvis is sufficiently developed, and the ilia project outwards; there is even an abnormal turning outwards of the ischio-pubic branches; and the breasts are of considerable size. These individuals prefer sedentary occupations; they like garments of brilliant colors; are excessively coquettish and adore perfumes; an oriental extravagance reigns in their apartments (*obs. iv*); they are also passionately fond of needle-work, etc.; in a word, everything in the outward character contributes in keeping up the error as to the real sex of these individuals.

At the end of this essay, several observations can be seen which relate clearly to this form of hermaphrodisism, therefore I will not stop to detail those examples, which are classical to-day, of Marie Marguerite, of Dreux, related by *Worbes*, which is found in the journal of *Hufeland*. To this same variety belongs equally the case of *Justine, A. J.*, which was decided by the civil tribunal of *Alais* (1869), then by the courts of *Montpellier* (1872), and of *Nimes*, after the first decision had been reversed by the Court of Cassation (1869). In the last place it was finally brought back before the civil tribunal of *Alais* (1873), the court then declared the individual "absolutely nothing, a nonentity, and annulled the marriage inscribed upon the registers of the civil state, and consequently, the ante-nuptial pledge, which governed the agreements

of the parties ; and ordered that mention of the present decision be made on the margin of the act of celebration of the aforesaid marriage, thus annulled by the officer of the civil state of the said commonwealth of Alais."

## II. APPARENT HERMAPHRODISM IN THE FEMALE SEX.

It is much more rare, as we have already said, to encounter in the female a disposition of the sexual organs such as could lead one in error as to their true sex, and consequently, such as would lead us to suppose that we had to do with an individual of the male sex. Nevertheless, several such cases exist in science, and these are, in summary, the peculiarities presented to the observer. The vagina is reduced to a simple funnel-shaped hollow cavity ; it is imperforate, or narrowed by bridles, which are so numerous that it is impossible to find the neck of the uterus by the touch ; the organ cannot be reached other than by a methodical palpation, or by the simultaneous employment of the catheter and the rectal touch. The clitoris may be as voluminous as in the case of the hypospadias which we have related above ; finally, singularly coincident, the meatus urinaris, in consequence of an unusual elongation of the urethra, may be found just beneath the clitoris, which fact increases the chance of error, when only a simple superficial examination is made. The labia majora, in these cases, are but slightly pronounced ; often the nymphæ are scarcely marked, in consequence of an arrest of development in all the parts ; finally, a last fact, which is prominent in some instances, and which still more singularly obscures the diagnosis, is the presence of the ovaries in the substance of the labia majora, in consequence of an inguinal hernia. It is then that only a most carefully conducted examination will enable us to differentiate the testicles from the ovaries (*Estopie ovarienne*. Loumaigne, thèse inaugurale

1869). But, we repeat it, this variety is rare—really exceptional. In the great majority of the cases, it will be easy enough to establish this variety of hermaphrodisism, which consists really and simply in an arrest of development, in a default of communication between the external and internal genital parts. It is true that, in these cases, *the ovaries, the sign par excellence of the female sex,* exist—sometimes displaced, sometimes in their normal situation—and indicate their presence, not by the menses, which cannot appear, but by various periodical troubles, symptoms of congestion, increased secretions, hæmorrhages, etc., which resemble really the regular menstrual evolution.

Add to these local signs, the entire group of external physical characteristics, and intellectual manifestations, which are really more conformed to the male sex than to the female, and it will be seen that it is with reason that the writers of the last century, and the beginning of this, have insisted with so much detail upon these analogous facts. The general complexion of these persons is much more masculine; the stature is increased, the body is lank, the limbs powerful; the muscular projections and the bony ridges are well pronounced; the hair is short, the hair follicles are developed and the surface of the body is covered with hair; the breasts are slightly developed; the depth of the pelvis is increased, and the menstruation is more or less completely wanting. Add to all this, the aptitude for a series of manly tastes, a preference for the occupations which require force and vigor, a deep voice, and you will have under your eyes, in a few words, those creatures which the Romans designated, with just reason, under the name of *virago*. One feature alone which led to error in several of the cases cited was, that the clitoris was so long that it was capable of copulation; but, as M. Tardieu has said,\* “this fact alone does not change the conditions upon which are founded the distinction of the sexes.”

\* Tardieu, loc. cit.

Marie Madeleine Lefort, said Bécford,\* seemed to belong to the male sex, if one considered the size of the trunk and the extremities, the shoulders and the pelvis, the size of the larynx, the tone of the voice, the development of the beard, and the urethra prolonged beyond the symphysis pubis. But she possessed, at the same time, the essential and constitutive organs of woman, uterus and vagina. Below, and posteriorly to the peniform clitoris, was a fissure or vulva bordered by two narrow, short labia, which were united by a thick and dense membrane. At the foot of the clitoris, this membrane was perforated with a round opening which gave passage to the urine and the menstrual discharge, and would have been sufficient, without doubt, to have made the vagina accessible if an incision had been made, between these two labia, from the base of the clitoris nearly to the posterior commissure. Since this instance, analogous cases have been reported by MM. Bouilland and Manec, Briquet, Richard, Gallard and Lefort.†

Marc, in his article of the *Dict. en 30*, reports that a uterus fallen out of the vagina has sometimes led the inattentive and ignorant surgeons in error, who believed it to be a veritable penis. Such was the mistake of the surgeons and the chief magistrates of Toulouse respecting a woman whom they declared an hermaphrodite, in 1693, and ordered her to wear the clothing of males. This woman coming to Paris, was subjected to an examination by able men; Saviard alone recognizing the error, reduced the prolapsed uterus, and gave to this woman her true sex.

Everard Home (*Philos. Trans.*, 1799,) cites a similar case.

It seems to me sufficient to prevent falling into a like error, to know that it may be committed.

\* *Bulletin de la Société de la Faculté de Médecine*, 1815.

† Lefort, *Thèse d'Agrégation*, 1863. *Des vices de Conformation de l'utérus et du Vagin.*

## III. NEUTER HERMAPHRODISM.

A third variety of hermaphrodisism is that which is designated under the name of neuter hermaphrodisism; it has been attempted to include in this variety two different categories: 1, the persons whose sex is not easily determined, well pronounced; 2, those persons in whom is observed the simultaneous existence of the organs of both sexes; this variety is also called the bisexual hermaphrodisism.

The first variety does not exist; there are no beings absolutely neuter, not having one sexual attribute; and nearly all the cases reputed to be such, should be included in the apparent hermaphrodisism of the male sex. Such is, at least, the opinion of the medical jurist, and it is certain that one should adopt in consultations that which is demanded of him in law.

Prof. Tardieu does not admit a single authenticated instance of bisexual hermaphrodisism, with coexistence of all the essential and accessory organs of the male and female sex. The fact has been admitted, however, by such authors as Maret, Meckel, Dugès, Is. Geoffroy Saint-Hilaire, Dutrochet; but it is true that, at this epoch, they were limited to an anatomical examination of the organs. We will make known our observations, however, in which the histological examination having been made by competent men, the simultaneous existence of the ovaries and testicles was established beyond question.

Maret\* reported an instance of the simultaneous existence of the organs of both sexes; on one side, said he, the labium contained a veritable testicle, with the cord of the spermatic vessels, the vas deferens, and a seminal vesicle full of spermatic fluid. The right labium enclosed a membranous pouch, in which descended, when the abdomen was compressed with the hand in the right

\* Maret Mém. de l'Acad. de Dijon : *Vesiculas seminales et ovarium habens.*

iliac region, an ovoidal body, which was recognized as an uterus; without any communication with the external parts, but having one Fallopian tube and one ovary. "Hubert," says this author, "though he had the essential organs of both sexes, was not able to fill the functions of either; in vain did the testicle elaborate the semen when an imperforation of the penis opposed its emission; a Fallopian tube embraced in vain a well formed ovary, when the uterus was enclosed in a pouch without opening."

This singular variety, in which the individual is found on one side of the body constructed after the type of the male sex, and on the other after that of the female sex, has been described by Is. Geoffroy Saint-Hilaire,\* under the name of hermaphrodisism with excess in the number of parts, *hermaphrodisism bisexual or lateral*. Verdiere and Sou have met with an analogous instance, as have also Colombo and Petit; these cases will be rather of the type that should be known under the name of androgynia; but the most commonly then, the arrest of development, especially in the case where the sexual system is double, belongs sometimes to the sphere of the masculine organs, sometimes to the feminine organs, in virtue of the law discovered by Serres, which he designated under the name of the equilibrium of the organs.

But, we repeat it, these varieties of hermaphrodisism are more than exceptional; and we have enlarged upon them because of the scientific standing of the men who have called attention to them. Without the aid of the microscope, it appears to us very difficult to distinguish between an ovary and a testicle, especially when concerned with organs that are atrophied, compressed, and have lost not only their normal relations but all their external features and their distinctive microscopical characteristics. Our aim has been only to represent the

\* Is. Geoffroy Saint-Hilaire. Recherches anat. et phys. sur l'hermaphrodisism chez l'homme et les animaux; rapport de Dutrochet.

ideas and the opinions sustained and learnedly elaborated by those who have preceded us.

In closing, I will name one other variety, designated under the name of superadded hermaphrodisism, by Dutrochet : in this case, the deepest organs are of one sex, the medium organs are of the opposite sex, and the external organs are the association of both sexes.

From what precedes, we are able to conclude, in a medico-legal point of view, that hermaphrodisism presents itself to the observer under two principal forms ; the frequent one, is that in which an individual of the male sex offers an arrest of development, with some general and local features which approach the female sex ; the other, rare and exceptional, in which the person of the female sex has, simultaneously, an excess of development in one organ and an arrest of development in some others, with a predominance of the masculine conformation more or less marked.

#### EMBRYOLOGY AND PATHOLOGICAL PHYSIOLOGY.

The preceding study would certainly remain in a state of confusion and be vaguely remembered if, in reviewing the facts, we could not at first sight with clearness and precision refer all these infinite varieties to an arrest of development : thanks to the works of modern embryology. The names of Isidore Geoffroy Saint-Hilaire, Dutrochet, Serres, and of Coste, recall the authors who have best elucidated these questions.

The genital organs consist essentially of two classes, which are clearly distinct, both in the man and in the woman : those of the one, preponderant and essential, are developed within the abdominal cavity, and are especially designed for the secretion of the fundamental products, ovule, sperm ; the other, secondary and accessory, perform their functions outside of the abdominal cavity, in the neighborhood of the pubic arch. These two parts during intra-uterine life are independent of each other. They

have a different location, their vessels and nerves arise from opposite sources, and they are even separated from each other by structures, whose normal rôle is to disappear at a given moment of foetal evolution. When this disappearance does not take place, and the adhesion abnormally persists, there will result some variety of these arrests of development which we have designated under the name of hermaphrodisism.

Take, for example, the conformation of the female sexual apparatus; one of the two groups of organs is superficial and comprises the external genital organs; the other is profound, intra-pelvic, and comprises the organs of generation, properly speaking, or the internal genital organs; these two groups are connected by an intermediate organ, the vagina, interposed between the *bas-fond* of the bladder anteriorly and the rectum posteriorly, in such a manner that it is a mixed organ, having a particular development, a special formation: should this conduit become obliterated, and the internal genital organs become atrophied, then the external genital parts present an exaggerated development, and there will result that variety of hermaphrodisism which is usually designated under the name of apparent hermaphrodisism in the female sex; because, then, the clitoris acquires an exaggerated size, it is grooved, as in those individuals who are the subjects of hypospadias, and the meatus, also, opens almost at the base of the clitoris.

But the results of embryology will enable us to penetrate still further in the study of these facts. In an embryo of thirty-five days, the Wolffian bodies, situated on the sides of the vertebral column, are completely developed: on their external face, there is a distorted conduit, which terminates above in a wide orifice: inferiorly, it opens in the bladder, alongside of that of the opposite side; it is this conduit, called the spermduct or oviduct, which, later, will constitute the *vas deferens* or *Fallopian tube*, according to the sex. On the internal

surface of the same Wolffian bodies, is observed a swelling, which grows from day to day : this will be the testicle or ovary ; this swelling has two filamentous processes, the superior of which goes to be attached to the oviduct, the inferior goes to be inserted in the pubic spine. Later, if the individual is of the male sex, the spermduct goes to unite with the testicle, then the vas deferens exists ; on the contrary, if the person is of the female sex, the Fallopiian tube remains isolated from the ovary.

Inferiorly, the oviduct and the spermduct are arranged in two different ways ; the spermduct remains separated from its fellow, and, after traversing an enlargement, which will become the prostate, opens into the inferior part of the urinary passages. The prostate, which, according to some authors, (Meckel, Is. Geoffroy Saint-Hilaire,) ought especially to be regarded as the analogue of the uterus, is a structure formed by the two vasa deferentia, just as will be seen the uterus is manifestly a formation of the two oviducts. In reality, these two conduits unite to form a single cavity which will be the cavity of the uterus ; should the fusion be incomplete, there will result a vice of conformation very rare, a partitioned uterus ; of which a remarkable specimen is in the museum of Orfila.

The preceding observations arise from the facts already prominently advanced by Dutrochet, in his report on the memoir of Is. Geoffroy Saint-Hilaire, viz., the complete analogy, the absolute identity which exists in the sphere of the internal generative organs during the first months of intra-uterine life, in the blastema even ; in the primitive seat, the absolute identity which exists in the internal part of the Wolffian bodies ; the analogous structure of the conduits which constitute the Fallopiian tube or the vas deferens ; even the anatomical elements entering into the structure of that which will some day be the ovary or testicle, the uterus or the prostate. It is not until the eighth month that the testicles leave the places

which they occupied, and during the ninth month they traverse the inguinal canal, in order to reach the scrotum. This remarkable analogy is even more striking, when we come to consider the development of the external generative organs. It is at about the sixth week that there is seen to form, from the animal layer, or the external layer of the blastodermic membrane, a fissure which is common to the genito-urinary organs and the apparatus of defecation, and which has received the name of *cloaca*; this fissure will always extend to meet the *cul-de-sac* formed by the inferior extremity of the intestinal layer. From each side of this antero-posterior fissure, according to Coste, two projections appear superiorly: rudimentary corpora cavernosa; inferiorly, there are two other smaller projections, which, in the man, are the origin of the scrotum, and in the woman, of the labia majora. These two upper processes unite at their upper surface, leaving, on their inferior surface, a groove for the canal of the urethra, in the male, while in the female, the groove remains permanent. If, in the male, the urethral canal fails to be developed beneath the corpora cavernosa, which constitute the penis, there will result a vice of conformation which we have already spoken of as hypospadias. The two inferior processes remain distinct from each other; but we may know, at the same time, as Professor Richet\* has said, "whatever the future sex may be, no difference exists; and it is not till later, in uniting, that the two processes form the scrotum in the male, while in the female, separated by the longitudinal fissure, they form the labia majora."

Later, a septum divides into two portions the fissure, which, to this time, was designated under the name of *cloaca*; the anterior division of this fissure, (uro-genital) continues to be a cavity, into which the excretory canals of the genital and urinary organs open.

Finally, in the male, the union of the two lateral pro-

\* Richet. *Traité d' Anat. Méd-Chirurg.*

cesses takes place, while in the female, the persistent labia continue to limit an opening, which now takes the name of vulva.

Thus, from this observation, we learn that, in the first moments of their existence, the external genital organs of all fœtuses have the same conformation, to that degree, even, that the clitoris in the fœtus of four months is as large as the penis of the fœtus of the same age. Two phases in the development, are then observed: in the first, the separation of the two lateral parts, which to this time had developed towards each other, remains permanent; whilst in the second phase, and only in the male fœtus, the union of the two lateral parts is effected; in this connection, we repeat the judicious remark of Dutrochet:\* “With respect to the conformation of the external genital organs, every man was at first a woman.”

Should the two borders of the uro-genital fissure fail to approach each other, there will be beneath the penis, often of diminished size, an infundibuliform cavity, bordered on each side by a fold, which will resemble the labium majus much more than ordinarily obtains in these cases; the urethra failing to effect its fusion beneath the united corpora cavernosa, there is hypospadias, and often cryptorchidia. There results, then, that vice of conformation which is made the subject of this study; and which allows us still to conclude formally that, in the great majority of instances, the hermaphrodites ought to be referred to the male sex.

Thus, as Serres has remarked, in his *Organogénésie*, the fœtuses of the mammifera pass by different degrees of organic formation, which correspond in their transitory phases to the normal, constant state of the creatures that are placed lowest in the organic scale; thus, is not the monstrosity often, he asks, the persistence of one of the transitory phases of the fœtal organization?

How are these arrests of development, located in the va-

\* Dutrochet. Acad. des Sciences.

rious parts of the genital organs, to be explained? Here again, we are enabled to accept the considerations given by Serres, regarding the preponderant influence of the vessels on the development of the organs. According to the origin of these vessels, he divides them into three orders, each one corresponding to a subdivision of the generative organs; the generative organs themselves being constituted by the association of six principal sections. Moreover, this fact has been established by Is. Geoffroy Saint-Hilaire, and that, too, in the male sex, as well as in the female. The superior division receives its arteries from the aorta, through the spermatic artery, or the utero-ovarian artery (ovarian, spermatic); the middle division, from the hypogastric artery, through the uterine arteries, the arteries of the prostate, the internal pudic, etc.; finally, the inferior, or superficial division has its own arterial network, arising from the external iliac artery, or the femoral, through the external pudic artery. Upon these data, however, his explanations are rather more philosophical than positive. Serres thus finds his conclusions, in order to show how the arrests of development, which constitute hermaphrodisism, may be located either in the two inferior symmetrical divisions, (for example, absence of union of the two lateral folds which should form the scrotum), or the two superior divisions, (absence, or arrest of development of the ovary or testicle), accordingly as the arteries of the inferior or superior divisions are obliterated or are of diminished calibre.

In the same manner, he explains the facts which we have considered under lateral or bisexual hermaphrodisism; facts that nearly all modern authors reject, as being the result of insufficient observation. Serres presumes that, in these cases, the vascular irrigation being unequally supplied to these three lateral divisions, there will result upon one side an incomplete development, and upon the other, on the contrary, a true hypertrophy; consequently a formation of female organs upon one side, and male organs upon the opposite side.

We have undertaken, at some length, to state these ingenious explanations, without being understood as adopting purely speculative theories.

Other authors have given another explanation of hermaphrodisism ; I will limit myself to the simple mention of it ; among others, I will cite the names of Is. Geoffroy Saint Hilaire, Dutrochet and Marc. According to these authors, who assume as the foundation of the fundamental law of the development of the sexual apparatus, that the most complete analogy exists between the male and female organs, to that degree, even, that in the early moments of their formation, it is not easy to distinguish them ; and that later, each part of the male apparatus has its analogue in the female apparatus, and reciprocally ; according to these authors, I say, it is not till the end of a certain period of intra-uterine life, that these elements, primitively neuter, will become male or female, according to the reciprocal impulses transmitted from the male ovule to the female ovule. This is the theory that we are enabled to call the *neutrality of the sexes* during intra-uterine life, which will explain why, under certain given circumstances, the transmitted impulse is insufficient to bring about a normal development, and, consequently, the entire series of analogous transformations in the different divisions of the generative organs.

Another school supposes the following principle ; and admits a *normal physiological bisexuality*. According to the leaders of this school, every fœtus possesses the two sexual apparatuses capable of taking on a complete development, but usually, and especially according to the law of Serres, known under that of the equilibrium of the organs, one of these apparatuses should normally atrophy ; whence results, in consequence, a complete male or female sexual apparatus. But, for another reason, still ignored : the laws of nature suffer a deviation, in order that there may be any arrest of development, the homogeneity is destroyed, and the consequence

will be the formation of the generative apparatus, after an extravagant and singular fashion, exhibiting the union of the male and female organs. This is an extremely ingenious theory, but it cannot resist one serious criticism founded upon the recent results of modern embryology, and especially of histology. Nevertheless, it is apparent how easy it will be to explain, by this means, the positive, but exceptional facts of bisexual hermaphrodisism, such as we have detailed in our observations V and VI.

In conclusion, I will call attention to the complete independence, the slight relations, so to speak, which exist, at least during the first months of intra-uterine life, between the fundamental organs of generation and the accessory organs, in both sexes; "whence results," says Professor Tardieu, "upon the one hand, the possibility of an incomplete evolution, which will retain certain parts in a primitive state, whilst other parts will develop normally; and upon the other hand, the confusion of the characteristics of the sex, which will be female on one side and male on the other."

#### APPLICATION OF THE PRECEDING DATA TO LEGAL MEDICINE.

Several medico-legal questions of great gravity belong to the vices of conformation of the sexual organs. Sometimes the individuals, who have had a false social rank from the time of birth, are condemned to a series of moral disturbances, before being able to recover their title, and to receive their common right. Sometimes a marriage, contracted under the conditions of identity of sex, has been declared null. As M. Tardieu has said, "from all the points of view, moral, physiological and social, these facts are of a nature to interest profoundly the philosopher and the physician."

The essential object of marriage being the union of the sexes, it results from this, that the difference of sex is the essential condition; article 144 of the Civil Code sup-

poses this condition, otherwise a marriage does not exist. Also, when by a concurrence of extraordinary circumstances, of which numerous examples are found in our old law, and even in the present, (decree of the Parliament, 1765, decree of the court of Trêves, 1808), when a union so monstrous is found, there is not a marriage, but a *representation of marriage*.

If the apparent silence of the Code, on the variety of causes of impotence, has been the cause of the division which still reigns among the jurists, it seems difficult to us, on the other hand, to include hermaphrodisism among the causes of *impotence*, as M. Legrand du Saulle has said, when that impotence, even the most notorious, is not a cause of opposition to the marriage; on the contrary, article 180 of the Civil Code sufficiently instructs the physician and the judge concerning the vices of conformation, which constitute hermaphrodisism. In fact, such are the expressions of the Code, when there is a *fault in the person*, the marriage cannot be challenged by another than one of the two espoused who has been led into error.

The law not having made mention of the word barrenness, we should give to the word impotence a legal significance quite different, and much more comprehensive, than when the same word is employed in a strictly medical sense. Always under the circumstances, when the impotence has been well marked, the courts have simply compared the fact to the cases in which there has been a fault in the person, such as enables us to pronounce upon the invalidity of the marriage.

Not wishing to further enlarge upon the causes of impotence, or upon the manner of proceeding in order to discover the truth and to render it visible and palpable, so to speak, to the eyes of the court, especially when concerned with questions so delicate, we will now examine the different questions which can be submitted to the medical expert, constantly recalling the fact that, in the

majority of instances, there is a fault in the person ; and that it is this fact which establishes either the invalidity of the marriage, or demands simply the revision of the social state, in consequence of a vicious conformation of the genital parts, which has given rise to the doubt or the fault.

Consider the first case, that which is presented most commonly, under circumstances that are generally well indicated. Marc, and Orfila, in their treatises on legal medicine, have, among others, reported the history of Marie Marguerite, who, wishing to marry, was visited by a surgeon on account of the absolute absence of menstruation ; and because of which, the tribunal of Dreux had directed her to assume male attire. Briand and Chaudé also speak of this individual who, christened and educated as a girl, one day demanded the privilege of marrying a woman whose pregnancy was due to his efforts.

The same authors still further express themselves : “ Marriage cannot be otherwise contracted than between two persons of different sex ; if it is to be supposed that a marriage might have been contracted between a woman and an individual who, up to that time, had been regarded as belonging to the male sex, but who really was a woman, as she was, will any one dare to assume that such a marriage is valid ? No ; without doubt such a union ought evidently to be annulled, because of error. Let one suppose, on the contrary, an individual in whom a freak of nature had given birth to a rudimentary virile organ, is there not equally in this case an error in the person ? In both cases, the justice of the decision is the same, *ubi eadem ratio, idem jus*. It is necessary to annul such a marriage.” Moreover, it was thus that the case was decided which came at first before the tribunal at Alais, in 1869 ; I desire to recall, in a few lines, the interesting particulars in this case. M. D. was married in 1866 to a person inscribed on the register of civil state under the name and surname of Justine A. Z., then

twenty-five years of age. In 1869, only, he decided to demand the nullification of his marriage, for which he alleged the following motives: according to his own observations and those of a midwife, this pretended married woman did not possess a single organ which characterizes the female sex; she had neither breasts, ovaries, uterus nor vagina; her pelvis was conformed to that of the male rather than to that of the female; moreover, though she was twenty-seven years of age, she had never had either menses or periodical lumbar and abdominal pains. After a first decision had been reversed by the Imperial Court of Nimes, which among other considerations gave the following: "While the law has not included impotence with the causes for nullifying a marriage, it follows that every demand, tending to prove that one of the espoused is found in that state, should be rejected," the cause was then submitted to the supreme court. It was then that M. Tardieu was appealed to for his opinion.

"The intervention of the physician, indispensable in such cases, is perfectly defined in its object, and should be, at the same time, perfectly distinct in its results. The question to decide is expressed in these very simple terms: the person espoused as a woman, is she a malformed woman, impotent and unfit for sexual union? In this case, there is not a cause for divorce, in the restricted sense the law has fixed. Is he a malformed man offering the deceitful appearances of the female sex? In this case, the marriage has not even existed, and is radically wrong. A medico-legal expert is, without doubt, necessary and indispensable, for the solution of the double question that I have just indicated."

Relying upon a very incomplete certificate, given by Dr. C—, M. Tardieu, taking as a foundation for his scientific argument, the general conformation, the narrowness of the pelvis, the negative development of the breasts, the absence of the vagina, but especially the absolute failure, not only of the original menstrual flow, but

even, at that time, of the periodical flux, accompanied by lumbar or abdominal pains, with swelling of the breasts, arrived at the conclusion, that this person, not possessing in reality a single organ essential to the constitution of the female sex, was a man, but a malformed man, presenting the most common type of hermaphrodisism.

In adding to his report, M. Tardieu recalled the fact that, from a medico-legal point of view, sexual indifference, or absolute neutrality does not exist; and Briand and Chaudé themselves, after having admitted theoretically this variety of hermaphrodisism, say that, from a medico-legal point of view, "these individuals should be regarded as being of the masculine sex; because, in them the female genital parts cannot be discovered; and the absence of virility depends only then upon the want, or the atrophy of the testicles."

The case was only decided in 1873, and the court annulled the marriage inscribed on the registers of the civil state of the commonwealth of Alais.

One can resume all which has preceded, in saying that, if the impotence or the infecundity of the espoused cannot be admitted as a cause for nullification of marriage, it is not the same for identity of sex, which requires most often a declaration of fault in the person, and consequently establishes the nullity of the marriage. This case is certainly the most difficult which can be submitted to the examination of the medical expert.

#### ERRORS IN THE INSCRIPTION OF THE SEX IN THE CIVIL STATE.

In addition to the foregoing facts, there remains to be considered the *errors in the inscription of the sex in the civil state*. These facts have a capital importance; because, if an error is committed, there will result a series of disastrous consequences which I have just indicated in the preceding pages.

It will be remembered that the greater part of the vices

of conformation are the result of an arrest in development, the subject of which, in the immense majority of cases, is an individual belonging to the male sex ; and that the malformations of the sexual organs of the female, are much more easy to recognize, especially on account of the multiple and varied manifestations the ovaries are subject to, by the aid of which their presence is made known.

When the physician is appealed to, to pronounce upon the sex of the person, often for the purpose of reinstating an individual in his true civil rank, who has had attributed to him a sex that was not his own, he should follow from point to point the line of conduct which has already been clearly indicated by Marc : 1, to observe at length, and under several aspects, the tastes, the habits, and the moral constitution of the individual ; 2, after an inspection of the entire surface of the body, to establish the sex, the characters of which seem to predominate ; 3, to examine with the greatest care the external organs of generation (penis, scrotum, urethra, testicles); to sound all the openings, in order to know the extent and direction and the character of the vices of conformation, which conceal the true sex ; 4, to be assured, finally, if there has ever been established an issue of catamenial blood ; for this fact alone is sufficient to unveil the predominance of the attributes of the woman.

Sometimes the true sex remains unknown throughout the entire life ; as in the case of Maria Arsans, who died at the age of eighty, who was a reputed woman and was married as such ; but the autopsy showed in her some signs of virility. Sometimes an accidental circumstance, such as the descent of the testicles, or their strangulation in the ring, awakens the attention.

One of the most affecting and dramatic observations, is that of the poor unfortunate, who lived in a convent boarding-school, almost to the age of twenty-two years, and who, by a series of multiple circumstances, saw his

own civil rank changed by a decree of the civil tribunal of Rochelle.\* The history of this individual, whose name was Alexina B—, has been written by himself, and shows what terrible consequences can come from an error committed in the inscription in the civil state. This person, the prey of a miserable existence, committed suicide, in Paris, in 1868; the autopsy showed very evidently that he was a man; the body had all the exterior appearances of a man, the hair system was very well developed, the penis existed, and, moreover, there were testicles.

In order to avoid similar errors, it is especially essential to consult the physicians who have attended upon the births; “and not to be content with the declarations of the parents, or the persons who witnessed the accouchement, but to ascertain for one’s self the sex of the infant.”

Sometimes there are circumstances under which it will be very difficult to pronounce immediately; “in these cases,” said M. Legrand du Saulle, “cannot one postpone the decision, as in a consultation of the guard of the seals, in 1811; and will not this postponement be preferable to a hasty affirmation, founded upon hypotheses, and analogies, and which can entail many disastrous consequences?”

One other medico-legal question should engage our attention, the solution of which, we are forced to admit, is not easy; we allude to the capability of the hermaphrodites for procreation and their fitness for marriage. Take, for example, the case of Alexina B—, in whom the penis was of small size; after the rectification of her civil rank had been obtained, could Alexina then marry? Was there really impotence? Yes; according to M. Legrand du Saulle; “because, though the act of copulation could be well accomplished, fecundation is really impossible. It remains evident that Alexina B— is an un-

\* Chesnet. *Annales d'hyg. et de méd. légale*, 1868.

classed being, incapable of reproduction, and consecrated to an eternal celibacy." It seems to me, however, that Alexina B— presents all the attributes of the male sex, and that some day, when there will be adopted in France the singular practice of certain American surgeons, it will be no longer admissible to say that fecundation by such a subject is in reality impossible.

For the medical jurist, we will admit only two classes of hermaphrodites: in the first, much the more numerous, will be the hermaphrodites whose sex is recognizable; the most frequently they will be individuals of the male sex, who will be able to marry (the impotence not being absolute), or of the female sex who cannot marry, their sexuality not being sufficiently distinct.

In the second class, will be those individuals whose sex cannot be defined. These are the persons whom Is. Geoffroy Saint-Hilaire designates under the name of negative, neuter hermaphrodites; the sex of these is indeterminate; arrested in their development, their analogue is found only in the embryo. Or rather, there may be an equal association of the two apparatuses. It is of this class of hermaphrodites, that Geoffroy Saint-Hilaire regretted "that the law admitted of only two great classes of individuals, upon whom it imposed different obligations and accorded to them different privileges."

Among these hermaphrodites, the aptitude of generation does not exist, the sexes being so imperfectly constructed, and they can neither fecundate nor conceive. Concerning the marriage, it ought to be declared null, not on account of error in the person, but because of the identity of sex of the two espoused.

In *résumé*, the arrest of development of the sexual organs gives origin, finally, to a medico-legal question of identity; this question will be solved generally, after a minute examination of the parts, being based upon the facts furnished by anatomy, physiology and embryology. Further, the greatest frequency of the vicious confor-

mation of the male, will enable us to conclude, usually, that we have to do with individuals of the male sex.

## OBSERVATIONS.

OBSERVATION I, (due to the kindness of Dr. Châtillon). Apparent hermaphrodisism in a person of the male sex.

P—, aged nineteen years, had resided in Paris since he was five years old. A consultation had been held a long time previously, at which MM. Ricord and Clerc were present. He wishes now to know if he can, or cannot receive a *carte*, which he claims, in order that he may give himself more fully to prostitution. It was decided that this *carte* should be refused; because, P— was a man.

He was considered as the subject of complete hypospadias, with this peculiarity, that the penis was so rudimentary that its volume did not exceed that of a well developed clitoris. The urethral canal was larger than normal, but it terminated in the bladder and not in a vagina. The rectal touch did not permit one to feel an uterus, nor had menstruation been established. However, the general configuration of the body, the aspect of the face, the quality of the voice, are rather those of the woman; the breasts, moreover, are quite rudimentary; the skin is smooth in those places where it normally is in the woman.

Concerning the tastes of P—, they appear to be those of a woman, and he denies with energy, and angrily, the accusation made against him, which is that he has a predilection for women.

In this instance, despite the external appearances, the tastes and the feminine aptitudes, one ought to conclude that this is simply a case of arrest of development of the sexual parts, accompanied by cryptorchidia.

OBS. II. Apparent hermaphrodisism in an individual of the male sex.

In the month of December, 1873, there entered la Pitié, hall Saint-Jean, in the service of M. Labbé, a person presenting one of the most remarkable instances of hermaphrodisism. This ac-

count may appear a little too imperfect; but I was only able to procure the following details, which, however, are much the most important.

In November, 1873, a young girl of about seventeen years, living in Asnières, went to consult a physician for a crural hernia. While examining this hernia, he was much surprised to find a penis as voluminous as that of the majority of young men of that age. The penis had a prepuce which could be made to cover it entirely, but, from habit, the penis was uncovered almost to the corona glandis; it presented no trace of the canal of the urethra. On the lateral parts, one could not recognize either the labia majora or nymphæ, not even the slightest fold which could be considered rudimentary. But, between the penis and the anus, almost equi-distant from both, there was an oval opening, which allowed with difficulty the passage of the little finger, and which could be penetrated but a little way, because of the violent pains which were provoked by the attempt.

The patient urinated through this oval orifice. It has been impossible to ascertain if, at the extremity of this canal, the uterus could be found, on account of the narrowness of the parts: the rectal touch even, in this connection, has only furnished negative information.

This pretended young girl had never had her catamenia; her features were rather those of a man than of a woman; she had no beard, but the loud voice was masculine; the breasts were markedly developed.

The presence of the testicles could not be established. The person admitted that she experienced a great pleasure when she was with the young girls, and seems to have felt, on several occasions, when touched by them, some voluptuous sensations, but has never had manifest ejaculations.

The conformation of the penis, the presence of the glans enveloped by a prepuce, the absence of the labia majora and nymphæ, but especially the negative results obtained from the search for the uterus and ovaries, and the absence of the multiple facts which could make known a menstrual elaboration, permit us to conclude, especially in view of the external physical characteristics, that this pretended young girl has been, to this time, incorrectly entered on the registers of civil state as being

of the female sex, but who is, in reality, a male, in whom the development of the external genital parts presents a malformation well known in science.

OBS. III, (due to the extreme kindness of my learned master, M. Gueneau de Mussy). Apparent hermaphrodisism in the male sex.

In 1848, I was consulted by a woman for her daughter, who, eleven years of age, had for some time exhibited many disturbances of her health. I was immediately struck by the walk of this child; there was something masculine in her physiognomy, and in her manner; the volume of the chest was noticeable at the base; supposing a malformation, I demanded of the mother if her child presented nothing peculiar; she responded to me, blushing, that there was something extraordinary in her conformation, but, till then, she had preserved the most absolute secrecy respecting this. At my solicitation, the mother submitted her child to my examination, and this is what I recognized. The pubis was covered with hair, and had been since the age of five, according to the mother. Beneath the pubis, there existed a sort of penis, having a length of about two-thirds of an inch, and terminating in a slightly swollen extremity; on its inferior surface, there was a groove, representing the superior wall of the urethra, continuing beyond at the level of the orifice of a veritable canal, which opened behind the base of the penis. Still posteriorly, there existed a kind of vulva, bordered by two rudimentary labia; this vulva limited inferiorly a little vaginal canal, into which I could introduce my little finger, and which terminated superiorly in a *cul-de-sac*. There was no trace of the testicles, either in the labia, or at the level of the rings. Having introduced a sound into the bladder, and my index finger into the rectum, I was enabled to recognize that my finger was separated from the sound only by a membrane, and consequently I was able to conclude, with approximative certainty, that the uterus did not exist.

The principal details of this observation permit us thus to affirm the existence of a masculine sexuality,

with arrest of development, which had an apparent similarity of the external genital organs to those of the female sex.

OBS. IV. Hermaphrodisism with sex imperfectly defined. (Personal observation).

In 1867, when I was physician of the District of —, I was asked by one of my countrymen to attend one of his friends. Upon reaching the place, I found myself in the presence of a young man, attired as a young girl, of about twenty-five years of age, offering a remarkable physiognomy, encircled by a head of long hair, and presenting not the slightest trace of moustache or whiskers. There was a slight something in the manners and carriage of the person, such as led me to demand unexpectedly if he was a man or a woman.

In informing me of his trouble, he began, blushing, by praying me to preserve with the greatest secrecy the details which I should observe. Then he passed into his chamber, where some minutes after I found him in bed.

This chamber was magnificently ornamented; innumerable perfumes were scattered here and there; everything, in a word, in the apartment, revealed the most effeminate coquetry.

He told me that he suffered in the genital parts; when I proceeded to a minute and attentive examination of these organs.

The clitoris was excessively developed, having a length of an inch and two-thirds, or two inches; at its summit it terminated in an enlarged extremity, quite suggestive of the glans; this organ was imperforate. Beneath, there was a little opening through which the patient urinated, leading into a cavity which admitted the finger without any difficulty. Nevertheless, it was impossible for me to feel the neck of the uterus, and there was nothing in the antecedents which showed a more or less clearly defined menstrual elaboration. The labia majora were normally formed. On the internal surface of the right labium, there was a soft chancre, which had been communicated by the gentleman who had solicited my attendance, and who, I was told, was the lover (l'amant) of the patient. The pubis was covered with hair. Nowhere was there any trace of the testicles. The

thorax was large, but the breasts were scarcely developed ; the voice was perfectly feminine.

This person had not the slightest predilection for women. Being possessed of a great fortune, he retained in his service a *personnel* of male domestics.

Subsequently, on several occasions, I saw him dressed in the most fantastic costumes, in garments of brilliant colors. At home he always remained clothed as a woman, but when he went out, he wore male garments.

In this observation, the positive conclusion seems very difficult, and we are inclined to offer the opinion that this is a instance of hermaphrodisism in which it is impossible to define the sex. The absence of the testicles, notwithstanding the abnormal development of the penis, forces one to question a masculine sexuality, while the absence of all menstruation, the absence of the uterus and ovaries, prevents us from concluding, in a positive manner, upon a feminine sexuality.

#### Obs. V. Bisexual hermaphrodisism.

Dr. Ceccherelli published in the journal *Lo Sperimentale*, of February, 1874, (Florence), the description of an hermaphrodite whom he had been called to examine. The subject had already been studied by Rokitansky, Seultz, and especially by Virchow, who had published a description of him in his *Archives of Pathological Anatomy*.

This monster is forty years old. The breasts are largely developed and pendulous ; the right eye is larger than the left. The penis at the meatus has hypospadias ; but a sound can be entered, which reveals another opening, two-thirds of an inch from the meatus, through which the urine and spermatic fluid is passed. There is but one, very well developed testicle. The penis and scrotum on the right, and the prepuce on the left, is the arrangement which, till recently, had been mistaken for a vulva, and the person had been considered as belonging to the female sex, and had received the name of Catherine. The glans had been mistaken for the clitoris. In introducing the finger

between the two folds, below the glans, an eminence was felt, having all the characters of the neck of the uterus. (Seultz).

The female apparatus is complete, and is situated behind a little septum formed by the skin.

Bilroth had proposed the incision of this septum, in order to make more evident the characters of the female sex, which are more in keeping with all the other signs of the hermaphrodisism. The catamenia have always been regular till within the past two years. He has, moreover, accomplished the function of copulation of the female sex. The prostate cannot be reached, on account of the uterus. The vesiculæ seminales exist, without doubt, for Catherine is able to be, in turn, the active party of coition, and the sperm, which has been examined by Virchow, contains spermatozoids. (Prog. Méd., 1874.)

This observation appears to us, to be, notwithstanding the brevity of the details which have been given to us, one of the clearest examples of bisexual hermaphrodisism: and from a medico-legal point of view, it seems to us that it will be very difficult to establish the civil rank of this person, for the female sexuality appears, at least, as evident as the male sexuality. But, in view of similar cases, considering especially the positive results furnished by the examination of the sperm, and further, on the contrary, that utero-ovarian fecundation will be impossible on account of the abnormal septum, we would not hesitate, under parallel circumstances, to pronounce in favor of a male sexuality, and to inscribe as males, on the registers of civil state, all persons who exhibit the same vices of conformation.

Obs. VI. Bisexual hermaphrodisism. By M. Odin, Interne of the Hospitals.\*

Nat. Per., day laborer, aged sixty-three years, born at Millery, (Rhône), entered the Hôtel-Dieu, of Lyon, June 10, 1873, in a state of absolute coma, resulting from an attack of apoplexy

\* Lyon Médical, No. 13 (21 Juin, 1874.)

on that day, and died on the fourteenth of the same month without regaining his consciousness.

The autopsy made on the following day, under the direction of Dr. Bondet, showed traces of an abundant cerebral hæmorrhage, which had caused the coma and death.

The subject is of medium height; body considerably emaciated; the extremities are short, slim and rounded; the hands and feet are small; the skin fine. The pelvis is narrow and contracted; the hips approach each other; in a word, it has the masculine conformation.

There is but a slight growth of hair, though the scalp and pubis are well covered, while the axillæ have scarcely any hair; the remainder of the surface is bare, and the surroundings of the anus entirely so.

He has no breasts, but the nipples are well developed.

The genital organs present: first, a penis surmounted by a glans; this is imperforate; it has a corona at its base and a furrow on its interior surface. It is covered with a prepuce throughout its entire extent, save at the inferior part at the level of the furrow.

The penis, measured on the cadaver, was three and one-third inches in length, and nearly of the normal size. Upon its inferior surface, there was a furrow, continuous with that at the glans which terminated in an orifice, situated below and in front of the pubis, through which the urine flowed. The penis is inserted at the commissure of the labia majora which gives origin to it, being continuous with the skin that covers it like a hood, resembling the clitoris.

The scrotum is cleft, and has the aspect of the labia majora covered with hair on their exterior, but smooth, having a semi-mucous surface, on their internal surface. They terminate in front in uniting at the root of the penis, and inferiorly by gradually becoming thinner, and without uniting to form a *fourchette*.

At the bottom of the space included between the labia majora, is the median raphe of the perineum, which extends from the urinary orifice to the anus, and measures two and one-third inches.

On the right side, near the inguinal ring, there is a little

rounded tumor, of the size of a pigeon's egg, which contains a little body, round and movable.

On the other side, the ring has no tumor analogous to the preceding, it is entirely free.

In catheterizing the urinary orifice, one arrives at very different results according as he follows the anterior or posterior wall of the canal. In following the first, the bladder is reached; but in following the second, one reaches a very deep cavity situated behind the bladder.

From the external examination, it is shown that we have to do with an hermaphrodite belonging to the male sex, from the presence of a penis a little irregular, a testicle, and the absence of the breasts and the form of the pelvis; and to the female sex, by the presence of the labia majora, the slight development of the hair upon the surface, the general aspect of the body, and the existence of a cavity behind the bladder, revealed by the catheter.

Notwithstanding these numerous similarities to the female sex, it seems more rational to assign this person to the male sex, to which he belonged during his life.

The internal generative organs are still less characteristic of the sex of the person.

Beginning at the orifice, which we have described, there is a canal of uniform calibre, an inch and a third in length, and one-third of an inch in diameter, lined with mucous membrane which is continuous with that of the labia majora; it terminates posteriorly by an orifice completely closed by an annular membrane like a hymen.

Anterior to this hymen, on the anterior wall of this canal, there is a smaller orifice which leads into the bladder; this is the true meatus urinarius.

This canal is quite anomalous, it being neither the urethra, though there is no other, nor the vagina, it being anterior to the hymen. It is a canal common to the urine, and the secretions from the vagina, formed by the two nymphæ and representing the vulva.

If we go beyond the orifices which we have described, by the anterior, the bladder can be reached, through a canal two-thirds of an inch long. The prostate is entirely wanting. By

the posterior orifice, the vagina is reached, having a length of about three inches and a circumference of two inches. The mucous membrane lining the vagina is smooth, and has no trace of columns. There is a little mucus in this cavity. At the superior part, there is a slight constriction, which is directly continuous with the lips of the cervix uteri, without forming a *cul-de-sac*.

The uterus has a large, rounded neck; its walls are thin, with a well marked arbor vitæ.

The cervix is not sensibly distinct from the body.

The body is rudimentary; it diminishes in size from the neck towards the fundus, becomes rounded and terminates in a long cord, of the size of a goose quill, and inclined to the left. The cavity of the uterus is two and two-thirds inches long; it terminates in a *cul-de-sac*. The uterus is received into a fold of peritoneum, which has the position, the direction and the form of the great ligaments. It even has the three alæ, but slightly marked.

In following the course of the cord in which the uterus terminates, a fleshy mass is reached, situated at the peritoneal orifice of the inguinal canal, making a prominence on the peritoneal side. It is enveloped in a fold of peritoneum, which forms a tunic, analogous to the tunica vaginalis. In this mass there is a partially developed testicle, surmounted by a voluminous epididymis; an imperforate Fallopian tube, with a well formed pavilion, and the fimbriated extremity directed towards an elongated irregular body, covered with little swellings, and even presenting little cysts. This body is probably the ovary, which it resembles, though the microscope has not revealed the presence of ovules. Between the Fallopian tube and the ovary, there is a rudimentary body of Rosenmüller.

Upon the left side, also, there exists a similar fleshy mass; but here it is situated at the external abdominal ring, where it forms a tumor as described above. The cord which is united to the uterus is smaller and less apparent. The testicle is a little more developed than on the opposite side. The epididymis, the ovary and the Fallopian tube present no differences.

The testicles are united to the vesiculæ seminales by the vasa deferentia. The right vas deferens is the larger and can be

followed to the testicle, but the left cannot be traced. The vesiculæ seminales are situated near the neck of the bladder, in front of the vagina; the right is a little larger than the left. The ejaculatory canals probably open at the entrance of the canal of the urethra, at which point there are several small orifices; but the canal of the urethra not having been opened, it being desirable to preserve the specimen, I am not able to affirm this in a positive manner.

We find thus, two generative apparatuses, almost complete, united in the same individual; the one, male, well developed, but wanting the prostate; the other, female, presenting all the organs, but developed to a less degree than the former.

To what sex does this individual belong? To no sex probably. In reality he had testicles, which could perhaps furnish spermatozoids, notwithstanding their small size, but ejaculation being impossible, fecundation was rendered extremely difficult, not to say impossible, despite the fact that the penis was capable of an erection and even intromission; consequently this male being is condemned to impotence.

The female being possessed some of the attributes of her sex; she was able to menstruate, but the ovary is too imperfect to furnish ovules; the Fallopian tube is incapable of conducting them, and the uterus of receiving and nourishing them; moreover, the microscope does not show the presence of ovules. Consequently the female being is as impotent as the male being.

Thus, it is seen that this hermaphrodite is equally male and female, or rather, is equally impotent as male and female, incapable of reproducing with either sex, less fortunate than the vegetable, incapable of fecundating himself, though possessing two, nearly complete, generative apparatuses.

This is the complete, or nearly complete, bisexual hermaphrodite of Geoffroy Saint-Hilaire, which is worthy of being described with the cases of Marie-Madeleine, of Lefort, and the hermaphrodite of Schrell, the only known instances in the human species.

N. P.—died a bachelor, but had he any predilections for either sex? Had he ever menstruated? My researches in this direction are not yet completed.

We give this observation with all its details as a striking example of bisexual hermaphrodisism. "These cases, moreover," said M. Tardieu, "constitute the true hermaphrodisism in which the individual, possessing the attributes of both sexes, is in a state entirely incapable of forming a valid marriage ; for, whichever may be the sex to which he is united, there will be between them an identity of sex, that is to say, nullity of marriage."



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The majority of microscopists would probably speak with less confidence in regard to their ability to determine the source whence dried blood stains are derived than does Dr. Richardson, but it is none the less true that the author's chapter on that subject gives evidence of much careful and conscientious study on this point, and his opinions are entitled to great weight.

The chapter on the "Examination of Morbid Growths," is singularly disjointed and incomplete; it is, indeed, the least valuable chapter in the book. It seems especially strange that a pathologist of Dr. Richardson's experience should content himself with merely reproducing the venerable old illustrations of cancer which we find on pages 312 and 313; illustrations which have done service in Prof. Bennett's book for years past, and were based on a cardinal error to begin with. We notice, also, that in several instances the author attempts to deal with "Prognosis" and "Treatment," subjects which have no more connection with microscopy than they have with astronomy.

In spite of these minor defects, however, we heartily commend this book as the "Hand-Book of Medical Microscopy" best fitted for the physician's office table.

Mr. Phin's little work, which is a mere *brochure*, "intended for beginners," is a step in the right direction. It is a vehicle of good common sense, in proof of which we quote the following from page 44: "The proper question" [in regard to magnifying power.] "is not, how much does a microscope magnify, but how much does it show." "A magnifying power of one hundred diameters, obtained by the use of first class objectives, will enable us to see more of the true structure of an object than could be reached by a magnifying power of five hundred, the lenses in the latter case being of inferior quality." Without attempting an exhaustive review of this miniature volume, it is sufficient to say that it contains the essentials of *amateur* microscopy, which is all the author claims for his modest, but meritorious effort. I. N. D.

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