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ANCIENT JEWISH EUGENICS

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Although it is almost certain that the ancient Jewish sages adopted much of the eugenic wisdom of their Greek and Roman predecessors and contemporaries, they, nevertheless, did not copy them blindly, for in several respects the precepts advocated by the rabbis differed considerably from those practised by the others, as follows:

1. The Greeks and Romans applied to the human race the method of the animal breeder; that is to say, they eliminated any deformed or weakly newborn infant by killing it. Seneca, for instance, wrote that it was as reasonable to drown feeble newborn babies as to slay diseased sheep. The ancient Hebrews, on the other hand, infused a humanitarian spirit into their system, and by tempering their eugenics with mercy, and combining judicious selective mating with intelligent antenatal and postnatal care, they succeeded in rearing a race, not indeed of supermen, but one which is probably the most virile that ever lived, and which has survived at times when many other and apparently stronger races, not subjected to anything like the same persecution and physical as well as mental stress and torture, have perished. The preservation of life was a principle which the Jews have always most jealously guarded. No matter what the condition of health of the newborn infant, its life is sacred and must be preserved; infanticide was, therefore, a capital offense. Tacitus, who,

as has been said by a recent American writer, deserves to be burnt in effigy for starting the vicious and fictitious dogma of Nordic superiority, in his great hatred of the Jews, sneers at them for not allowing any of their newborn babies to be put to death! (Necare quemquam ex agnatis nefas putant. Hist. v. 5.) It is true that infanticide, as a crime punishable by death, only applied to full term babies, and, in theory, the killing of a premature baby before it reached its 30th day of postnatal life, i. e., before one could be quite sure of its viability, was punishable by a fine only. In practice, however, even premature babies were adequately protected, because every baby was considered to have been born at full term unless convincing evidence to the contrary was produced (Yebamoth, 37a). Once a baby has reached its 30th day of life, even if its prematurity was quite certain, it was put in the same class as a full term child, and the one who brought about its death was guilty of homicide.

Besides infanticide, Plato advocated other methods of dealing with the unfit: he would leave the chronic invalid to die, lest he beget children as weakly as himself. The Jews, on the other hand, deemed it a sacred duty to cure the sick and to restore them to a state of health which would render them useful members of society. Any weakly children could be treated by proper postnatal supervision.

As regards foeticide, or induction of abortion, the responsibility for the act varies with the degree of the foetal development as well as with the purpose for which the act is committed.

(a) *The degree of foetal development.* In agreement with the Hippocratic view, the Rabbis were of opinion that before the 40th day there was no animation in the foetus, which was therefore considered merely as a "bladder of water" (Niddah, 30a; K'rithoth, 7b, Rashi). Induction of abortion, therefore, at this stage was not a criminal offense. It was, however, a moral offense, because—though inanimate—the ovum is a potential life. After the 40th day, although the foetus is already an animate object, it is not yet a separate life until labor has set in, but is considered as *pars viscerum matris*, and while, therefore, it is a criminal offense to kill it, it is not a capital offense. (Niddah, 44b; Baba Kamma, 42b.) If, however, as the result of such a criminal abortion, the mother dies, the offender is guilty of homicide. If a mother is accidentally killed and her foetus is still alive inside her, then it is no more considered as part of its mother but as a separate living entity, and must be delivered by caesarian section. Neglect to do so might be a capital offense (Erachin, 7a). If, however, a mother dies of natural causes, it is useless to deliver her unborn baby by caesarian section, because, "in such cases the foetus dies first."

The principle of the foetus being part of its mother was applied by the Rabbis to the case of a pregnant mother condemned to death, when the execution is not postponed till after the birth of the child, but the foetus being part of its mother must share her fate (Ibid). This was a humanitarian provision to save the woman unnecessary mental anguish. But although the foetus is part of its mother, it is nevertheless necessary to do everything to promote its welfare. Thus, the longing of a pregnant woman for any kind of food, including that forbidden by the dietary laws, must be satisfied—even on such a strict fast-day as the Day of Atonement. (Yoma, 82a.)

(b) *The reason for the foeticide.* When there arises the question of killing the foetus to save the mother's life, then not only is such an act

permitted but it becomes obligatory. "In the case of a woman whose labor is difficult, it is necessary to cut up the foetus inside her womb and extract it *morcellement*, because the life of the mother takes precedence over that of the foetus. If, however, the head has already emerged, it is not permissible to sacrifice its life in that way, but Nature must be allowed to take its course." (Oholoth, vii, 6.)

2. Another point in which ancient Jewish eugenics differed from that of the Greeks is that while the former, e.g. the Spartans, adopted the Lyncurgen discipline which avowedly aimed at perfecting physical vigor at the expense of other aspects of humanity, the Jews did not fail to take into account the complexity of man's psychological make-up. The result was that while the Spartans reared a people that were pre-eminently fitted for war, the Jews aimed at cultivating a race that were fitted both for peace and for war.

3. Further, Jewish eugenics, in view of the Biblical injunction to be fruitful and to multiply, necessarily looked with disfavor upon any attempt to limit the number of children by any of the methods generally included under the term contraception. It is to be noted, however, that contraception is not only not prohibited but is in certain cases encouraged. One of these cases is lactation, because of the probable bad effect of a supervening pregnancy on the mother's milk, and the consequent harm to the child at the breast. Indeed, according to a famous Talmudic commentator, it is permissible for a woman to be sterilized if she is likely to bear children who are going to be tainted with physical or mental disease. (Luria, on Yebamoth, iv, 44.)

4. Lastly, it is a noteworthy fact that while Plato would have State regulation of marriage, and would institute a system of spying upon young married people, the Talmudic Rabbis, although they imposed upon the Jewish individual as a religious duty whatever they con-

sidered was for the good of the people as a whole, nevertheless refrained from enforcing as a religious injunction the various eugenic principles which they advocated. This is so for two reasons:

(a) Because they realized that, although taken as a whole these principles, when applied in practice, were sufficiently satisfactory to justify their being recommended, they were not sufficiently accurate to be ritually enforced. Thus, although the saying "like father like son" was used by the Rabbis (Erubin, 70b) and was their guiding principle in all matters relating to match-making, they were well aware that it was not by any means universally true. Like Sophocles, the Rabbis were aware of and were puzzled as to how to explain the fact that "sometimes a noble offspring does not spring from well born parents, nor an evil child from useless parents." Thus, Terah worshipped idols but his son Abraham was righteous; Hezekiah was righteous while both his father Ahaz, and his son Manasseh were wicked. The prophets Jeremiah and Ezekiel were also aware that neither virtue nor vice is necessarily an inheritable character, and that, therefore, the son shall not suffer for his father's wrong-doing, nor shall he be rewarded for his father's good deeds. "What mean ye," asks Ezekiel, "that ye say the proverb: 'the fathers have eaten sour grapes and the children's teeth are set on edge'? . . . Ye shall not have occasion any more to use this proverb . . . and beget a son that is a robber, the son shall surely die. . . . If he beget a son that seeth his father's sins and doeth not such like . . . he shall not die for the iniquity of his father. . . . The soul that sinneth it shall die." (Ezek. xviii, 5-20.)

(b) Another reason for the failure of the Talmudic Rabbis to enforce their eugenic teaching by religious legislation, is that they realized that it might be futile to coerce by legislative means in matters in which sentiment plays a prominent rôle. For, although they were at one with King Solomon that "beauty is not every-

thing, for grace is deceitful and beauty is vain, but a woman of good character is one to be praised," yet they appreciated the fact that beauty in a woman is a highly commendable attribute. "Happy is the man," say the Rabbis "who has a beautiful wife, the number of his days is doubled." (Yebamoth, 63b.) Again, "A woman with beautiful eyes," says a Rabbi in another place, "needs no further recommendation." (Taanith, 24a.) In order to endear a bride to her bridegroom, it was the custom for the guests at the wedding feast to dance and sing the praises of the "beautiful and virtuous bride." The Rabbis attached eugenic value to a true love match, for they stated that "he who marries for money shall have worthless children" (Kiddushin, 70a), and Maimonides (12th century), says that "a psychological harmony between husband and wife is the foundation of good progeny." (Issurei Biah, xxi, 12.) R. Akiba, that most remarkable Rabbi of the 2nd century, went as far as to say that if a man finds another woman better-looking than his wife, he should divorce her (Gittin, 90a)—since it is proof that he does not love her any more.

Mercenary marriages were denounced also by the Greek philosophers and poets, including Euripides and Theognis.

EUGENIC PRINCIPLES OF THE ANCIENT RABBIS

Having briefly summarized the differential characters between Greek and ancient Jewish eugenics, we may proceed to a consideration of the eugenic principles of the Talmudic Rabbis in some detail.

The 613 Precepts. There are altogether 613 precepts made up of 248 positive ones, or "Do's" and 365 negative ones, or "Don't's" which every Jew is supposed to obey, and of these, that of reproduction is the most important. Celibacy was, therefore, prohibited except in the case of students, for, as the Talmud puts it, "how can one study with a yoke round his neck?" (Kid-

dushin, 29b.) It will be remembered that Euripides in certain of his writings praised celibacy, whilst in the "Ion" he expresses his hate of the childless. The marriage age is specifically given by the Rabbis as 18 in the case of man, although marriage at a still earlier age, say from the age of 13 onwards, was encouraged. R. Chisda (3rd century), said that he was better off than his friends because he married at the age of 16, and had he married at 14 he would have been able to defy Satan (ibid. 29b and 30a). The marriage age was, however, not strictly adhered to, for the Midrash, which dates between the 6th and the 9th centuries, distinctly states that generally 30 to 40 is the age at which men marry. The marriage age of girls was the approach of puberty, i.e. 12 years and one day. The Shulchan Aruch however, which is the authoritative Jewish religious law-book compiled in the 16th century, states that a bachelor over 20 years old can be compelled by the ecclesiastical authorities to marry. Greek opinions were against early marriages and Solon legislated against them. Plato gives the marriage age for a man as 25-30, and 16-20 for a woman. In this respect the Jews were, from a strictly eugenic standpoint, wiser than the Greeks, since not only do early marriages tend to obviate impure living, with all its dysgenic consequences, but they also increase the child-bearing period and opportunities, and there is some statistical evidence to the effect that the children of mothers who married young are stronger than the average. (See Ewart, R.J. *Eugenics Review* Oct. 1911, pp. 201-232.) To overcome the economic disadvantage of an early marriage, the young couple were, for a specified period, given free board and residence in the house of the bride's parents, until, with the aid of the dowry, the young couple were able to establish themselves.

Disparity of age. But, whatever the exact ages at which the couple married, the Rabbis laid some stress on the importance of there not being any marked difference in the ages of the two parties. "He who gives his young daughter

in marriage to an old man," said a Rabbi, "encourages her to live an immoral life." (Sanhedrin, 76a and b.) Another Rabbinical saying is that "a woman prefers a poor young man to a rich old man." The evils of marked age disparity were also stressed by the Greeks. (Hesiod, Sappho, and Theognis.)

Contraception. Though, as I have already said, contraception was in certain cases permitted, e.g. when a pregnancy would be harmful to the mother or to her baby at the breast, deliberate avoidance of pregnancy for other than eugenic or health reasons was condemned by the Rabbis as akin to murder in the religious sense. (Yebamoth, 63b.) The Talmud (ibid.) narrates that a famous bachelor Rabbi of the 2nd century, Ben Azai, was declaiming against such practices, when a heckler called out, "Why do you not practice what you are preaching?" To this he replied, "I have dedicated my life to study, and am compelled to let the world's population be maintained by others," for, as I have said before, celibacy was condoned in students.

Such was the importance that the Rabbis attached to children that any marriage in which there had been no children after 10 years had to be dissolved. (Yebamoth 64a, Kethuboth, 77a.) Another Rabbi was even more stringent and set the time limit at 2½ years (Yebamoth, 64b). Divorce after 10 years of childlessness was also advocated by Plato.

The Rabbis even fixed a minimum for the number of children one should have. According to one school, two children were the requisite minimum, and according to another school, the object of marriage was not fulfilled until there were at least four children, viz. two of each sex. (Yebamoth, 62a.) Apparently, those who were satisfied with two children per family considered that so long as there was one child to replace each of the parents, the population would not decline. The other school, however, were more far-sighted, for they probably realized

that account must be taken of the considerable number of children that do not survive to become parents. Indeed, if we take present day figures of survival to marriage age, as well as of celibacy, it is easy to show that the minimum number of children per couple, to keep the population stationary, is four. (Feldman, W. M., *Ante-Natal and Post-Natal Child Hygiene*, London, 1927, p. 177.) It is, of course, impossible to estimate what was the requisite number of living children per family to achieve the same purpose at that time. In view of the much higher mortality rate at all ages that must almost certainly have prevailed at that time, one might think that even 4 children per family would not be enough. On the other hand, it is most probable that not only was the celibacy rate considerably less, but that the number of sterile marriages was also less at that time than at the present day. It is therefore not unlikely that 4 children per couple was an adequate number even then.

Although, as we shall see, the Rabbis were quite certain about the mode of inheritance of certain physical and mental characters, they were not so convinced that moral characters were also hereditarily transmitted. The following anecdote, related in the Talmud (*Berachoth*, 10a), is given to illustrate that in this respect we are, in the words of Ecclesiastes (viii, 1), ignorant of "the interpretation of a thing":

When King Hezekiah was ill, the prophet Isaiah came to visit him and reprimanded him for having abstained from having children. Hezekiah pleaded that he had reason to believe that his issue would not be worthy members of society, but Isaiah retorted that he was not competent to fathom such mysteries of heredity. Hezekiah begged that he might recover and be allowed to marry the prophet's daughter, so that in virtue of his own, as well as of the prophet's privilege, he might have worthy children. This request Isaiah refused.

Hezekiah recovered and became the father of Manasseh who succeeded him to the throne, and in fact "did that which was evil in the sight of the Lord" for he gave himself up to heathen worship. (2 Kings, xxi.) If we remember that Hezekiah was the son of Ahaz, who was an idolater, we shall find a good deal of eugenic wisdom in this somewhat fantastical passage. For, in spite of himself being a good man, Hezekiah feared that his children might inherit his father's rather than his own moral character. He therefore asked Isaiah for his daughter's hand in marriage, hoping that by such a union, his chances of having worthy children would be considerably increased.

Another interesting anecdote to illustrate the great importance the Rabbis attached to children—notwithstanding the possible consequences—is the following: When Pharaoh decreed that all Jewish new-born males should be drowned, Amram, the father of Moses, refused to have any more children, and all the Israelites followed his example. His daughter, however, pointed out to him that his behaviour was even worse than Pharaoh's decree, for while the latter applied to the male sex only, his own action stopped the birth of children of either sex. (*Sotah*, 12a.)

This endeavour to spread a layer of protoplasm of the greatest thickness over the earth—to borrow a metaphor from Bateson—was the exact opposite of the Platonic idea, for Plato limits the population of the State to 8,000, and to attain this end the number of marriages is restricted.

The Influence of Heredity. Although deliberate birth control was in most cases looked upon with disfavour, every care was taken to prevent the birth of undesirables by a process of selective mating. The following Talmudic passage, though of a highly metaphysical character, is of very great eugenic interest, because it tells us which characters the ancient Hebrews

considered to be hereditary and which they believed to be determined by environment:

"The angel of pregnancy takes the ovum, immediately after fertilization, and asks the Almighty what shall be its fate, whether it shall develop into a strong person or into a weakling, a clever person or a fool, a rich person or a pauper, but no question is asked whether it will be a respectable, God-fearing person or not, because with regard to the other characters which are hereditary, the gates of destiny are closed at the moment of conception, while the moral conduct of man is subsequently determined by his environment." In other words, "everything depends on God except the fear of God." It will also be seen that the Rabbis favoured the view held by one school of modern eugenicists that the pauper is born, not made.

Although, according to the fatalistic ideas of certain Talmudic philosophers, marriages are made in heaven, and "forty days before a child is conceived its mate is decided upon" (Sotah, 2a), yet in choosing a wife, says the Talmud (Yebamoth, 64b), regard should be paid to her family history, lest she be the carrier of some transmissible taint like epilepsy, since such illnesses may occur in the offspring. The same applies to the skin disease called *tsaraath*. The nature of this disease is not known with any certainty, but we know that some skin diseases, like psoriasis, epidermolysis bullosa, &c., are hereditary. It is to be noted, however, that these matrimonial restrictions apply only if there were more than one such case in the family. Other physical characteristics which the Rabbis considered hereditary are stature and complexion. Thus the following warning is given:

"Two very tall persons or two very short persons should not marry lest their children be giants or dwarfs. The children of light-skinned parents may be albinos, and those of dark-skinned parents may be as black as pitch." (Bechoroth, 45b.) This interesting passage

contains certain observations which are only partly in agreement with modern genetic knowledge. While it is true that the correlation coefficient for height between parent and child is fairly high (about 0.5), nevertheless the tendency for children of very tall or very short parents is not toward gigantism or dwarfism respectively, but on the contrary the tendency is to revert to the mean height of the population, in accordance with Galton's law of filial regression. It is only in cases of actual dwarfism, whether of the achondroplastic or of the nanistic type, that the condition is hereditary. Achondroplasia is definitely transmissible from generation to generation, but although nanism tends to be familial, the children of nanistic dwarfs are not necessarily dwarfs. The condition is, according to Cockayne, probably due to two independent genes. (See Feldman, W.M. Foetus Diseases, Malformations and Monstrosities, Brit. Encyclop. Med. Pract., vol. v. 1937.) Regarding complexion, only the children of true albinos will be albinos, and only those of true negroes will be really black, but the children of two blondes will not be albinos, nor will those of two brunettes be black.

"Two imbeciles should not marry." (Yebamoth 112b.) In view of what we know of certain types of mental deficiency that are transmitted in a mendelian recessive manner, the rule is a sound one. It is remarkable, however, that the Rabbis expressly state that two deaf-mutes may marry. (ibid.) It is true that there is a very small group of cases of deafmutism in which the condition is a congenital mendelian recessive character, and would therefore necessarily show itself in the children of two such affected parents. In the large majority of cases, however, the condition is acquired as the result of some naso-aural trouble and is not transmissible. Hence, whatever one may think of the advisability of such unions on general grounds, they are, on the whole, not unsound from the eugenic standpoint. Indeed, the Rabbis specifically state that acquired characters are not inherited; for, say they,

"We know that the children of the blind or the lame do not inherit the same afflictions." (Chulin, 69a.)

Good physique was known to be an hereditary character, although it is susceptible also to environment. Thus R. Jochanan (3rd century) said that it is only people who come from very healthy stock that need not spend money on expensive food, but people who are derived from delicate or unexceptional families must spend all they can afford on sustaining food. (ibid., 84a.)

So much for the inheritance of physical and pathological characteristics. As regards mental ability, several Talmudic statements show that the Rabbis considered these also to be hereditary in nature. Unlike the Spartans who thought that a healthy body would in itself insure a healthy mind, and who, therefore, interested themselves in breeding a people who excelled in physical fitness, the Jews felt that intellectual and physical vigour, though often associated with each other, are by no means inseparable.

"A man," say the Talmudic Rabbis, "should sell all he possesses in order to marry the daughter of a scholar, or marry his daughter to a scholar or other man of character, because he may then rest assured that his children will be scholars; but marriage with the daughter of an ignoramus will result in ignorant children." (Pesachim, 49a.) "For a learned man to marry the daughter of an ignoramus is like planting a vine tree among thorns." (ibid.) "A girl with a good pedigree," says the Midrash, "even if she be poor and an orphan, is worthy to become the wife of a king." (Num. R.i, 5.)

"If one sees that scholarship is dying out in his children," says a Rabbi, "one should marry his son to the daughter of a learned man." (Pasachim, 49a and b.)

The Greeks also believed in the influence of heredity on mental and moral characters.

Theognis says: "No education can make a bad man good; no Aesculapius can cure the moral taint. Just as roses and hyacinths do not spring from squills, so from a slave woman no free child can be born."

"When choosing a wife," says the Talmud, "one should inquire into the character of her brothers, since children take after their maternal uncles." (Baba Bathra, 110a.) This quotation shows that the Talmudic Rabbis had a suspicion that many of the hereditary characters were transmitted in a sex-linked manner, in accordance with what is now known as Nasse's law which operates in the case of haemophilia, a disease, with the mode of transmission of which the Rabbis were familiar. Thus, they ruled that if two children of the same *mother*, but not necessarily of the same father, or if one child of each of two *sisters* (but not of brothers), died as the result of circumcision, the next child of the same mother or of another sister, must not be circumcised, lest it bleed to death. (Yebamoth, 64b.)

As I have mentioned before, although the Rabbis were not unmindful of the matrimonial value to a girl of a pretty face, they considered spiritual beauty a greater asset to her than good looks. The Midrash tells a pretty story of a young girl who, when asked by a wayfarer for a drink of water, gave it both to him and to his animal. In thanking her for her kindness, he paid her the compliment of comparing her with Rebekah, who behaved in a similar manner to Eliezer. "But you are not like Eliezer," said the girl roguishly (for Eliezer gave Rebekah earrings and a bracelet). "My child," said the man, "you possess more beautiful ornaments than any man can bestow: wit, wisdom and kindness." (Echa R.i. 9.)

The girls themselves, however, naturally set the greatest store on whatever attractive features they happened to possess—good looks or good family—and pushed their claims accordingly. A matrimonial fair used to be held in

the Jerusalem parks twice a year, when the girls would sing and dance in the presence of eligible bachelors. The good looking girls used to sing in praise of beauty in a woman, while those whose capital was good descent rather than good looks, sang a warning to the potential suitors not to be deceived by a pretty face, "for 'false is grace and beauty is vain.' Pay regard to good breeding, for the object of marriage is to have children." (Taanith, 26b and 31a.)

The influence of heredity on mental and physical characters was, as I have stated above, also known to the Greeks, from whom it is probable that the Jews have to some extent learned it. But while the Greeks concerned themselves only with immediate progenitors, the Jews traced the genealogy back to more remote ancestors, and thus, in a way, foreshadowed Galton's law of ancestral heredity. The story is told that a marriage had been arranged between the children of two scholars, but the bride died before the marriage ceremony. The pedigrees of the bride and bridegroom were then investigated and it was found that while the latter was of royal descent, the former was not. The marriage would therefore have been an unsuitable one. (Kethuboth, 62b.) Indeed, the Talmud speaks of special pedigree books or scrolls in which the genealogical trees of people were recorded. Thus, a certain Rabbi of the 2nd century, is reputed to have come across a pedigree scroll in Jerusalem wherein it was recorded that a certain person was illegitimate, and that another had committed a murder. (Yebamoth 49b.) The Mishnah also says of ten classes of Jews, whose genealogy could be traced, that they had come from Babylon. (Kiddushin, iv, 1.) "Genealogical chains" are also mentioned a number of times in the Midrash (e.g. in Cant. R.v. 1), while various portions of the Bible contain genealogical tables of such minuteness of detail as would rejoice the heart of the most ardent eugenicist.

To show the lengths to which the ancient Jews used to go voluntarily to enforce these

Rabbinical eugenic recommendations, the Talmud records a curious custom that prevailed at that time of ostracising any person who contracted an unworthy marriage. A barrel full of fruit was broken in the market place, in order to attract the attention of the public, and the following proclamation was made:

"Listen ye our brethren! A.B. married an unworthy wife, and we fear lest his offspring mingle with ours; take ye therefore an example for generations to come that his offspring may never mix with ours." (Kethuboth, 28b.)

Such a ceremony was called *k'tsitsah* which means a severance, and the fruit was given to children to eat. The fact that a person could testify that as a child he was present at such a ceremony, was believed to have acted as a great deterrent.

Differences between parents and their children. Although most of the references of genetic or eugenic interest found in the Talmud concerned themselves with the *resemblance* between parents and children, the Rabbis were not only, like the Greeks, aware of the not infrequent *differences* between them, but were exercised in their minds as to why such differences should exist. Thus, the question is asked: "Why is it that the children of scholars are not always scholars themselves?" In accord with the teleological ideas which dominated Rabbinical as well as contemporary philosophy, one Rabbi replied that it was so in order that scholars should not claim their erudition as a birth right. (Nedarim, 81a.) It was not, of course, till the second half of the last century that the puzzle was solved by the Bohemian monk, Mendel, in 1866.

HEREDITY VERSUS ENVIRONMENT. In addition to the genetic factors which are transmitted from parent to child in accordance with the laws of heredity, the Rabbis also believed that factors of an environmental nature may like-

wise affect the child before and after birth. The following are some of them:

1. *Parental Alcoholism.* Alcohol was believed to have a deleterious influence upon the gametes before and during conception. Thus, Rabbi Nachman said that Rabbi Bibi's daughters needed cosmetics and other artificial aids to beautify themselves because their father was fond of intoxicating drinks, but his own daughters needed no such treatment because he was an abstainer. (Sabbath, 80b.) As regards the supposed evil effects of alcohol upon the germinal cells during conception, one Rabbi believed that children begotten during a state of inebriety were imbeciles. (Nedarim, 20b), while another believed such conceptions to result in abortions or in feeble, short-lived children. (Kallah R., 1.) This was also the prevailing view of the ancient Greeks. Diogenes on seeing an imbecile crippled child said to him, "Your father was drunk when you were conceived." Plutarch, who records this story writes on this question as follows: "Coitus which is intended for procreation should be carried out either in a state of complete abstinence from alcohol or after having partaken of it in moderate amounts. Children conceived during a state of intoxication of their fathers tend to be drunkards." In Greek mythology, the deformed Vulcan was supposed to have been begotten by Jupiter when drunk with nectar. It may be pointed out here, that while recent experimental and pathological research has shown that prolonged circulation of a high concentration of alcohol in the blood will deleteriously affect the spermatozoa, the effect of a single drinking bout immediately before conception is probably negligible. (See W. M. Feldman, *Ante-Natal and Post-Natal Child Hygiene*, London, 1927.)

Another effect that a moderate amount of alcohol, taken by the father before coitus, was believed by the Rabbis to have, was to favour the conception of a male child. (Shebuoth, 18b.) This observation, which, as far as I know,

is not to be found in any of the Greek writings, is a most remarkable one because it is also to some extent in agreement with modern knowledge. Agnes Bluhm, for instance, has shown that in mice in which the males had been subcutaneously injected with alcohol, the sex ratio, i.e., the proportion of male to female births, was raised from 79:100 to 122:100, because of the paralyzing or lethal effect of the alcohol upon the female determining spermatozoa, giving the male determining variety a better chance to reach the ovum.

2. *Geographical Influence.* The geographical position of a place, or its climatic condition, was believed to have an influence on the child during its postnatal as well as during its intra-uterine stage of development. "There are places," says the Midrash, "where people grow up strong, and others where they grow up weak; some where they are handsome, and others where they are ugly." (Num. R., 2.) The Talmud, more in a spirit of exuberant patriotic fervour than as the result of scientific observation, says that "the atmosphere of Palestine makes its inhabitants wise." (Baba Bathra, 158b.) Plato had similar ideas. The most interesting quotations, however, in this connection are those relating to the influence of geography on sex. The Talmud refers to a "boy village" where the first children born to mothers were males (Gittin, 57a), and the Midrash speaks about a similar village where all the children born were males, so that whoever wanted a male child moved into it, and any resident who wanted a female child moved out of it. (Lamentations R. ii. 4.)

3. *Factors Influencing Sex Determination.* While the Rabbis were well aware that sex is determined at the moment of conception, and that no post-conceptual environment can have any influence upon the sex of the zygote, for they categorically state that "it is a fruitless invocation of Providence to pray for a son when the wife is already pregnant," (Berachoth, ix, 1), they nevertheless believed that some un-

known, and therefore, uncontrollable factors may influence the sex of the child during its early stages of embryonic development. Indeed, according to the casuistic speculations of a certain Rabbi, Dinah, the daughter of Leah, was during the first forty days of embryogenesis, changed from a boy to a girl (Berachoth. 60a), although he adds that this was a miracle "which one cannot expect to recur."

This utterly fantastic speculation assumes considerable interest in the light of the very recent researches of Broster and Vines (*The Adrenal Cortex, a Surgical and Pathological Study*. London, 1933), which shows that even such an apparent absurdity is not altogether outside the realm of scientific possibility. As is well known, every early embryo is primarily bisexual, in that it possesses both Wolffian and Müllerian ducts, which are the precursors of the male and female genital organs, respectively. The chromosomal influence of the particular fertilizing spermatozoön determines which of these pairs of ducts shall ultimately atrophy. Atrophy of the Müllerian ducts results in a male child, and atrophy of the Wolffian ducts produces a female child. Broster and Vines have shown that the cortical cytoplasm of the foetal adrenals of either sex contains certain fuchsino-phil cells which have an endocrine function and secrete a masculinizing or androgenic hormone—which has been isolated—and they attribute hermaphroditism or intersexuality to a failure of this hormone to disappear in the female foetus at a time when the Wolffian ducts are due to disappear. They also believe that the female type of hermaphroditism can be explained on the assumption of the presence in the male foetus of an, as yet undiscovered, feminizing hormone which fails to disappear at the time when the Müllerian ducts are due to atrophy. They further believe that the degree

of masculinization or feminization depends upon the duration and intensity of the one or other hormone in the female or male foetus respectively. Hence, although sex is normally determined at the moment of conception by the chromosome constitution of the fertilizing spermatozoön, this gametic influence may, in certain cases, and under non-understood and uncontrollable circumstances, as well as in varying degrees, be overcome. (See W. M. Feldman, *Foetus Diseases, Malformations, and Monstrosities*. Brit. Encyclop. Med. Practice, vol. v. London, 1937.)

4. *Astral Influences*. In agreement with contemporary ideas, some Rabbis believed that the future career of a child was determined by the relative positions of the planets at the time of its birth. (Sabbath, 156a.) Other Rabbis, however, deprecated such superstitious beliefs by the categorical statement that "Jews must not believe in the influence of planets upon human destiny." (ibid.) The great Maimonides also most vigorously denounced "the folly of astrology." If we bear in mind the fact that most of the highest intellects among the ancient, mediæval and later philosophers subscribed to astrological beliefs, it will be realized how much ahead of their times those ancient Jewish Rabbis were in this respect.

For the influence of other environmental factors upon the future career of the child see the writer's "The Jewish Child." London, 1917, where the subject of antenatal care and child welfare from the ancient Jewish standpoint is discussed in great detail. What I have attempted in this essay was to compare the genetic principles of Rabbinical eugenics with those of their predecessors and contemporaries, as well as to assess those principles in the light of modern knowledge.