ONE OF THE PROBLEMS OF CONCERN TO BOTH HISTORIANS AND SOCIOLOGISTS OF SCIENCE IS THE NEED TO EXPLAIN HOW CHANGE COMES ABOUT. WHAT FACTORS ARE INVOLVED IN REJECTING THE ERRONEOUS ASSUMPTIONS OF THE PAST IN FAVOR OF NEW HYPOTHESES MORE IN ACCORD WITH THE EVIDENCE? ONE OF THE MORE WIDELY ACCEPTED CURRENT EXPLANATIONS HOLDS THAT ERRONEOUS THEORIES USUALLY ARE NOT REJECTED AT THE FIRST INDICATION OF THEIR WEAKNESS. RATHER THE PROCESS IS CUMULATIVE. AT FIRST THERE IS AN EFFORT TO BOLSTER THE OLD THEORY BY INCORPORATING THE NEW DATA AND ONLY WHEN THE DIFFICULTIES OF PATCHING THE OLD THEORY TOGETHER BECOME GREATER THAN ACCEPTING A NEW EXPLANATION IS A NEW THEORY WELCOMED AND THE OLD THEORY ALLOWED TO COLLAPSE (KUHN, 1962). OVERTLY THIS IS SOMEWHAT OF AN OVERSIMPLIFICATION OF A RATHER COMPLEX PROCESS (BULLOUGH, 1970; BASALLA, 1968; BARBER AND HIRSCH, 1962; CLAGETT, 1959). BUT THE QUESTION TO BE EXAMINED IN THIS PAPER IS WHETHER SUCH A THEORY HAS ANY VALUE FOR EXPLAINING CURRENT CHANGES IN ATTITUDES TOWARD SEX, PARTICULARLY HOMOSEXUALITY. THOUGH KUHN'S VIEW HAS CONSIDERABLE VALIDITY, IT IS ESSENTIALLY AN INTERNALIST VIEW AND THE STUDY OF SEXUALITY EMPHASIZES THAT NO INTERNALIST VIEW OF SCIENCE IS WHOLLY SATISFACTORY IN EXPLAINING CHANGES WHICH HAVE STRONG SOCIAL OR POLITICAL IMPLICATIONS. IN SUCH CASES IT IS ALSO ESSENTIAL TO TAKE INTO ACCOUNT FACTORS IN SOCIETY ITSELF.

WESTERN ATTITUDES TOWARD HOMOSEXUALITY IN 1900 WERE ESSENTIALLY WHAT THEY HAD BEEN FOR NEARLY 2,000 YEARS. LYING AT THE BASE OF MOST ATTITUDES TOWARD VARIANT SEXUALITY WERE A SERIES OF ASSUMPTIONS, BASED MOSTLY ON UNEXAMINED GREEK HYPOTHESES WHICH HAD BEEN ADOPTED BY EARLY CHRISTIAN WRITERS AND INCULCATED DEEPLY INTO THE WESTERN PSYCHE. AS SECULAR OFFICIALS CAME TO MOVE INTO THE FIELD OF SEXUAL MORALS, MOST OF THESE ASSUMPTIONS WERE TAKEN OVER INTO LAW. IN THE EIGHTEENTH AND NINETEENTH CENTURIES TRADITIONAL ATTITUDES WERE REINFORCED BY NEW SCIENTIFIC AND MEDICAL ASSUMPTIONS WHICH, IN THE ENGLISH-SPEAKING COUNTRIES AT LEAST, LED TO EVER MORE SEVERE LAWS AGAINST "DEVIANTE" SEXUALITY (BULLOUGH, 1974, 1976). WHILE THE MEDICAL MODEL HAD THE THEORETICAL ADVANTAGE OVER THE PREVIOUSLY ACCEPTED RELIGIOUS MODEL OF BEING CHANGEABLE, IT INITIALLY PROVED ACCEPTABLE BECAUSE ITS CONCLUSIONS WERE ESSENTIALLY THE SAME. IT ALSO ALLOWED SOCIETY TO EXPLAIN DEVIANCE THROUGH THE ILLNESS CONCEPT: BY CLASSIFYING SOMETHING AS AN ILLNESS SOME SORT OF TREATMENT WAS IMPLIED. THE FACT THAT TREATMENT WAS POSSIBLE SEEMED TO BE A MORE HUMANITARIAN WAY OF DEALING WITH HOMOSEXUALITY THAN CLASSIFYING AN INDIVIDUAL AS MORALLY DEFICIENT OR CRIMINAL, BUT IT ALSO GAVE CERTAIN SEGMENTS OF THE MEDICAL
community, namely the psychiatrists, a vested interest in retaining and reinterpreting the medical model to keep "deviant" sex under their purview.

In spite of the benefits of the medical model, it had serious disadvantages which in the long run outweighed the advantages. Much of the difficulty with it was that it was based upon inadequate information. For example, its formulators had no real understanding of the process of fertilization and reproduction, something that was only beginning to be understood. Though Hertwig had observed the actual moment of fertilization among sea urchins in 1873 (Needham, 1959; Cole, 1930; Hertwig, 1876, 1877), full understanding of the process in humans and higher mammals remained rather clouded until well into the twentieth century (Beneden, 1883; Morgan, 1901). Some indication of the erroneous assumptions current when the medical model of sexuality was being formulated becomes obvious when the misconceptions surrounding menstruation are examined. Based upon the theories of Pfluger (1863) that nervous stimulation led to the beginning of the menstrual flow, the American Clarke, as late as 1874, could argue that intensive use of the mental facilities by adolescent females would lead to a nervous breakdown because it conflicted with the nervous demands of their natural capacities (Clarke, 1874). In 1875, a writer in the respected American Journal of Obstetrics went so far as to argue that menstruation was pathological since its effect was to prevent conception (King, 1875-1876). This was an extreme view but it indicates how great the misconceptions were.

Similar errors existed in understanding the nature of human semen. Following the work of Tissot in the eighteenth century, it was believed that loss of semen was dangerous to a person's health. Tissot believed that physical bodies suffered a continual waste, and unless the losses suffered in such wastage were replaced, death would be the inevitable result. Normally much of the wastage was restored through nutrition, but even with an adequate diet the body could still waste away through diarrhea, loss of blood, and most importantly for the purposes of this paper, through seminal emission. Seminal emission in males was particularly dangerous, but even in females such loss could lead to insanity (Tissot, 1758; 1766; Bullough, 1975; Bullough and Voght, 1973). The influence of such ideas is demonstrated by Acton, who in 1871 wrote that the emission of semen imposed such a great drain on the nervous system that the only way a male could avoid permanent damage was to engage in sex only infrequently and then without prolonging the sex act. Acton held that males were able to do just this because God had ordained females to be indifferent to sex in order to prevent the male's sexual energy from being overexpended (Acton, 1871; Marcus, 1964, 1966). The late nineteenth century literature is a gold mine of materials emphasizing the dangers of sexuality, and some writers went so far as to state an inevitable consequence of masturbation was a life of deviant sexuality (Bullough and Voght, 1973; Haller and Haller, 1974; Comfort, 1967). Scott (1899),
for example, classified most homoerotic acts as masturbation and emphasized that simple masturbation led men to separate "further and further from women," and to be "put in a peculiarly unnatural relation to them." In the mind of many physicians and other writers of sex manuals, any kind of intercourse which did not have procreation as its aim was dangerous; even intercourse for procreation had to be limited. But why, some might ask, if sexual activity was regarded as so harmful, had not generations of individuals in the past become insane? How had mankind managed to survive? Those concerned with the new "scientific findings" about sex had an answer to such a question, namely, that the growing complexities of "modern civilization" and the higher evolutionary development of mankind posed special problems. This meant that the dangers of sex exhaustion were particularly great among the educated brain workers in society, a group whose numbers were increasing, and who represented a higher stage on the evolutionary scale than the less advanced social classes (Beard, 1884).

Such notions passed into the general public consciousness. An American sex manual of the immediate post-civil war period expressed some of these ideas rather succinctly. The author wrote that a sexual orgasm was more debilitating to the bodily systems than a whole day's work.

It is this constant abuse of the sexual organs, producing constant failures and the most loathsome diseases; it is this ridiculous farce of a strong man putting forth all the nervous energy of his system till he is perfectly prostrated by the effort without one worthy motive, purpose or end; it is this which has so disgraced the act of impregnation. When human beings are generated under such conditions, it is no wonder they go through life as criminals, without a single good purpose or deed, and where all sense of shame is not lost, hanging their heads as if ashamed of their existence. . . . Just as sure as that the excessive abuse of the sexual organs destroys their power and use, producing inflammation, disease and corruption, just so sure is it that a less amount of abuse in the same relative proportion, injures the parental function of the organs, and impairs the health and strength of the whole system. Abnormal action is abuse (Willard, 1867).

Obviously not all medical or biological writers subscribed to these ideas about the dangers of the loss of semen or accepted insanity as an inevitable result of masturbation. Many, however, remained silent since the pressure to conform was strong, and individuals who did not do so publicly were often severely criticized by the medical establishment. Hagenbach (1879), for example, after studying some 800 male "insane" at Cook County Hospital, emphasized that it was difficult to exaggerate the dangerous effects of masturbation. Moreover those who challenged the sexual abuse theory as a causal factor either in insanity or other "more severe" forms of sexual deviation such as homosexuality were faced with the alternative of coming up with an acceptable theory. The one most favored by many was a hereditary explanation, but even this was often put in pathological terms.
Opposing any pathological classification of homosexuality was Ulrichs who, under both his own name and the pseudonym of Numa Numantius, poured out a series of polemical, analytical, and theoretical pamphlets defending homosexuality in the period between 1864 and 1870. Ulrichs (1868) attempted to demonstrate that what society regarded as "ab-normal" instincts were inborn, and were no more dangerous to the individuals born with such instinct than procreative sex would be between married individuals. Most who looked to the inborn theory, however, refused to accept the conclusion that homosexuality was either natural or normal. Moreau (1887), for example, tried to explain sexual "perversion" by adding a sixth sense, the genital sense, to the traditional five senses of seeing, hearing, smelling, tasting, and feeling. Just as a person could be born blind, or deaf, he could be born with a deformed genital sense, a sort of predisposition to perversion. Homosexuals therefore were a class separate and distinct from other individuals, forming an intermediate category between reason and madness. Tarnowski (1933) accepted the possibility of inherited homosexuality, but still classified it as a pathological condition. He emphasized also that homosexuality could also be acquired by reading dirty books, keeping bad company, or by masturbation. Even when homosexuality was acquired, however, it probably was a sign of psychic degeneration. Cesare Lombroso (1958, 1972) agreed. He explained homosexuality through evolutionary processes, wherein some degenerate forms of men had been left at levels of bisexuality. As evidence, Lombroso offered as fact his belief that acts regarded as criminal in civilized societies had once been natural, as demonstrated by the fact that they were found among animals and were often common among primitive peoples. He explained this by his belief that humanity had progressed up the evolutionary scale, and as it progressed those highest on the evolutionary scale had outgrown robbery, murder, promiscuity and sexual perversion. Since each child at birth had to repeat the evolution of society in order to become civilized, it was inevitable that some of the lesser people would fail and become criminals, sexual deviants, or mental defectives. These criminals or "perverts" were born morally "insane," and should not be treated by being thrown into prisons but by being sequestered in asylums and prevented from perpetuating their species. In any case, many of those who subscribed to a hereditary theory also adopted the medical modality of treatment as being more humane.

CHALLENGES

Whether one subscribed to the innate or acquired theory of homosexuality in 1900, the vast majority of medical people tended to regard it as pathological. While such a diagnosis undoubtedly was prejudicial to homosexuals and others of variant sexual persuasion, it at least had the merit of encouraging further study to determine which of the theories
was correct. Westphal, a professor of psychiatry at Berlin, attempted to establish the study of variant sexuality on a scientific basis. His first case history (1869) was of a young woman who, from her earliest years, liked to dress as a boy, cared for boys' games, and found herself attracted only to other females. Westphal came to the conclusion that the abnormality was congenital, not acquired, and that it could not therefore be termed a vice. He also emphasized that, though neurotic elements were present, there was nothing present in the patient he observed that could be called insanity. He called the phenomenon "contrary sexual feelings," and in process prepared the way for further scientific investigation of the subject.

Westphal himself went on to study more than 200 cases of contrary sexual instinct, classifying and categorizing as he went along, emphasizing the wide variety of behavior associated with the contrary sexual instinct. Others soon followed his lead. When the New York physician Shaw, for example, was approached by a homosexual patient for treatment in 1882, he searched the literature for similar cases. Finding only a handful of cases, mostly based on the work of Westphal, he proceeded to write up his findings in order to acquaint his fellow physicians with the existence of the contrary or "perverted" sexual instinct as a medical problem (Shaw and Ferris, 1883). Most important in popularizing the variety of behavior associated with the contrary sexual instinct and imprinting the medical model of such behavior on the public mind was Richard von Krafft-Ebing. Krafft-Ebing held that the purpose of sex was reproduction, that sexual activities not undertaken with this ultimate purpose in mind were "unnatural," a sign of the perversion of the sexual instinct. Mankind in his mind had to struggle almost continuously with the natural sexual impulses in order to keep love pure and chaste, to avoid falling into the mire of common sensuality. Very much a man of his time, Krafft-Ebing firmly believed that sexual abnormality could be either inherited or acquired through frequent abuse of the sexual organs. Ultimately, however, heredity loomed most important in his mind, since even where perversion was acquired it could only be found in individuals who had hereditary weaknesses in their nervous systems. He collected a number of cases primarily from police and court records, to document his concept of sexual perversion, over 200 by the eleventh edition of his work, all classed as showing traces of "hereditary taint," "moral degeneracy," categorizing almost all sexual activity not leading to procreation as psychopathic (Krafft-Ebing, 1894).

Once the work of Krafft-Ebing became widely read, every psychiatrist as well as a large number of general practitioners wanted to add their individual case studies to the growing list of perverted patients. The literature expanded at almost geometric rates. Between 1898 and 1908 an estimated 1,000 items with references to homosexuality or related sexual behavior were published (Hirschfeld and Robinson, 1936). In retrospect, much of this writing can be classed as pseudoscience; most of it was a waste of paper. Inevitably, however, there were a few individuals
who broke new ground, ultimately laying the basis for the challenge to the assumptions in effect in 1900. Havelock Ellis and Magnus Hirschfeld, with a strong assist from Sigmund Freud, were the most important innovators. Ellis' contribution was his extending cultural relativism into the field of sex. The results of his studies were published in a monumental series of volumes, *Studies in the Psychology of Sex*, issued and revised in the period between 1896-1939. In a sense Ellis was a kind of naturalist, observing and collecting information about human sexuality rather than judging the individuals involved. Though somewhat romantic about sexuality, he was cautious in his conclusions. Unable to definitively answer whether homosexuality was inborn or acquired, physical or psychic, he touched all bases by stating that there was some truth in all views. He himself tended to believe that sexual differences were inborn and non-pathological, although perhaps there was a higher number of neurotics among deviants than among other groups. Essentially, Ellis pleaded for tolerance, for accepting the fact that deviations from the norm generally were harmless, occasionally perhaps even valuable. He was a sex reformer who urged society to recognize and accept sexual manifestations during infancy, to realize that sexual experimentation during adolescence was part of a growing-up process, and to take some initial steps towards accepting the pleasure principle in sex by repealing the ban on contraception and eliminating laws dealing with sexual activity between consenting adults in private (Ellis, 1897, 1939).

Magnus Hirschfeld was convinced that homosexuality was not a deviation or a perversion, but rather the result of certain inborn characteristics influenced by internal secretions of the glands. In no way was it pathological. To document his beliefs he compiled a mass of information about homosexuality, transvestism, and other forms of sexual activity that is still invaluable to any researcher in the field today. He founded the first journal devoted to the study of the “intermediate sex,” the first Institute of Sexual Science, and compiled an important library of over 20,000 volumes and 35,000 pictures to assist in his research. Most important, Hirschfeld, like Ellis, was also a propagandizer for change. Hirschfeld mounted a campaign to change the Prussian laws against homosexuality and in the process brought the whole subject out into the open. Many prominent German intellectuals from Einstein to Freud lent their names to the cause (Bab, 1903; [Brand], 1914; Hirschfeld, 1902, 1905). Hirschfeld realized that homosexuality could not be dealt with in isolation, and he campaigned for birth control, advised on sex problems, and offered marriage counseling. He also made a strong effort to distinguish between different kinds of variant sexuality, and coined the term transvestism to describe a behavior pattern of cross dressing which he regarded as distinct from homosexuality (Hirschfeld, 1910, 1920).

Coinciding with this challenge to the medical model of homosexuality was the realization of the difficulties in effecting cures. For example, the famous neurologist Charcot, the director of the Salpetriere asylum, and his colleague Magnan tried to cure several cases of “sexual inversion”
with hypnosis. After failing to achieve even a modest success, they came to believe that inversion was a constitutional nervous weakness due to hereditary degeneration (Charcot and Magnan, 1882). Freud, who had studied with Charcot, arrived at similar conclusions about the possibilities of a cure if his famous letter (1951) to a mother of a homosexual is any indication of his ultimate feelings on the matter. In 1935 he wrote her that

Homosexuality is assuredly no advantage, but it is nothing to be classified as an illness; we consider it to be a variation of the sexual development. Many respectable individuals of ancient and modern times have been homosexuals. . . . By asking me if I can help, you mean, I suppose, if I can abolish homosexuality and make normal heterosexuality take its place. The answer is, in a general way, we cannot promise to achieve it. In a certain number of cases we succeed in developing the blighted germs of heterosexual tendencies which are present in every homosexual; in the majority of cases it is no more possible. . . .

While Freud himself (1920, 1933) wrote comparatively little on homosexuality or transvestism his concepts were very early applied to the subject by some of his followers. Although Freud adopted the idea of bisexual potential and latency, and felt that there must be an underlying, persistent, biological force involved in forming specific sex behavior, his ideas were early seized upon by writers such as Sadger, Bluher, Senf, and Coriat to explain homosexuality, and even advance possible cures (Sadger, 1913; Bluher, 1913; Senf, 1913; Coriat, 1913). In spite of Freud's pessimism about a cure and his reluctance to call homosexuality an illness, his followers found support for the medical model in his approach. The greatest amount of writing on the nature, causes and cures of homosexuality was by psychiatrists and psychoanalysts, and it was this group more than any other which kept emphasizing the pathological nature of homosexuality (Bullough et al., 1976).

Ellis and Hirschfeld were not the only challengers of the assumption of the illness concept. Karsch-Haack (1911) and Carpenter (1914) gathered together considerable anthropological data to emphasize the cultural relativism of sexual attitudes. Historians such as Paul Brandt, under his own name and the pseudonym Hans Licht (Brandt, 1906, 1905; Licht, 1926–28, 1952), and Symonds (1891, 1901) added their weight to the same conclusions. To determine what was normal, a number of a quantitative studies were done, many by Americans, by psychologists, biologists, sociologists, and physicians, emphasizing the differing nature of human sexuality (Kinsey et al., 1949; Davis, 1929; Hamilton, 1929; Dickinson and Beam, 1931; Bromely and Britten, 1938; Terman, 1938; Hohman and Schaffner, 1947).

In spite of such studies, many of them by physicians, the medical community in general, and psychiatry in particular, continued to emphasize the pathological nature of sexual deviance (The American Psychiatric Association did not remove homosexuality from the category of mental
illness until 1974.). Why such willingness among the medical community to cling to a pathological diagnosis? Let us examine the cultural, political, and scientific factors and see why they gave support to the reluctance to change a diagnosis which, although based upon evidence which failed to support it, was kept until the 1970s.

Culturally, the factor that seems most important was the long-time association of sexual activity with procreation. As long as nonprocreative sex was looked upon with hostility, then homosexuality, regardless of what the researchers found, was likely to find great disfavor. In short, changes in attitudes, even among scientists, were affected by outside forces. Most important in this respect is the rise of the contraceptive movement. Though efforts at contraception are as old as history, effective contraceptive efforts date from the middle of the nineteenth century with the pioneering works of W. P. J. Mensinga, J. H. Rendell, and others who then, at least in the English-speaking world, had to challenge the beliefs about the dangers of nonprocreative sex (Himes, 1970). The battle for birth control in this country was not put in quite such terms, but the implications were realized by sex reformers as diverse as Ellis, Hirschfeld, and Norman Haire who were active in the International Congress for Reform of Sex Laws.

In addition to changing attitudes toward sexuality, brought about by the movement for dissemination of contraceptive information, came a growing awareness of female sexuality. This, like the contraceptive movement, was tied into the movement for growing emancipation of women. Though the sexual needs of some women had long been a part of popular masculine mythology, there was also an equally prevailing counterbelief that good women were repulsed by sex and engaged in sexual intercourse only to have babies. The first scientific studies on female sexuality were undertaken by Robaud (1876) in the nineteenth century, but the major studies began in America with the work of Dickinson (1933). The studies of Dickinson and others in the 1930s were the forerunners of the studies by Masters and Johnson (1966, 1970) during the past decade, the results of which are known to educated Americans. Closely allied with the recognition of female sexuality was the recognition of the stages of venereal disease and the development of cures. Through the efforts of such individuals as Phillip Ricord, Fritz Shaudinn, Eric Hoffman, and Paul Ehrlich, the nature of syphilis, the most frightening of the venereal diseases, was finally understood. Ehrlich also went on to develop a cure, although the cure itself sometimes seemed as bad as the disease. The effective diagnosis and understanding of syphilis enabled the physician to separate some of the symptoms previously associated with sexual activity itself into the category of venereal disease, which, like nonvenereal diseases, had an organism which could be isolated and cured. Thus it was not simply sexual promiscuity or a sexually dissolute life that led to degeneracy, as the nineteenth-century physician tended to believe, but rather this was a result of the third stage of syphilis which previously had gone undiagnosed and untreated (Dennis, 1962; Rosebury, 1971).
Once sexuality was separated from venereal disease, particularly when the development of the arsenicals and antibiotics allowed it to be cured, the ultimate basis of the masturbatory theory had been undermined.

Interestingly, the basic understanding of these factors was clear by the third decade of the twentieth century, but there is little indication of change in the bulk of the psychiatric literature about homosexuality or other forms of sexual behavior. One of the difficulties is that psychiatry had erected the doctrine of sexual pathology into an official diagnosis which could only be changed by a vote, a very antiscientific way of deciding scientific truth. Thus the psychiatrists were put in a position of being not scientists but politicians, a problem which has too often been ignored in discussing scientific change. To be able to come to terms with the new sexual data, the erroneous psychiatric assumptions about homosexuality and other forms of sexual variation had to be undermined from without as well as within.

One of the factors forcing a major reevaluation was the growing realization of the dangers of overpopulation. Though its antecedents can be traced back at least to Malthus, the movement only became organized in the last few years of the nineteenth century. The leaders then were the eugenicists, a term coined by Francis Galton and popularized by Karl Pearson, the first holder of the chair of eugenics at University College, University of London. The early eugenicist movement unfortunately had strong racial and class prejudices, the after-effects of which still plague the zero population growth movement. In spite of this, by their emphasis on the dangers of overpopulation, particularly of the "defectives," they were instrumental in suggesting alternatives to procreative sex (Stoddard, 1922, 1923; Schultz, 1908). Ultimately as the movement tied in with the contraceptive movement, both female sexuality and nonprocreative sexual activity came to be more widely accepted. Inevitably, once the public came to accept nonprocreative sex, then homosexuality, a form of nonprocreative sex, also had to be reexamined.

Giving impetus to the acceptance of the pleasure principle in sex was the growing public awareness of sexual diversity. Most important in this respect was the Kinsey research which suddenly made a large segment of the public aware of the wide variety of sexual practices (Kinsey et al., 1948, 1953). No matter how much Kinsey's sampling techniques may be criticized, he and his coworkers brought human sexual behavior out into the open and removed it forever from the dominance of the medical community. Americans became more aware of how much the scientific assumptions about sex were based upon unsupported data, particularly since following Kinsey a number of other investigators, few of whom were psychiatrists, broke new grounds, challenging traditional assumptions. Some of these discoveries are quite recent and were dependent upon discoveries in other fields. For example, until the number of chromosomes in the human cell was finally set at forty-six by Tijio and Levan (1956), the whole process of acquired versus genetic sex traits had to remain unsettled. Once the discovery was made, it was quickly followed
by the realization that chromosomal sex was far more complicated than previously had been assumed. In addition to the generally accepted designation of sex by the presence of either two X chromosomes (a female) or an XY combination (a male), other viable genetic possibilities exist, including X, XXX (both females), XXY and XYY (both males). There is even a condition known as mosaicism in which some of the cells (not all) of a given individual have either a supernumerary or a missing chromosome. The implications of these chromosomal variations for actual sexual behavior are not yet fully understood.

It is now realized that, regardless of the sex determination set by the chromosomes, there are developments in utero which influence the nature and appearance of the sex organs, and perhaps even sexual behavior. Though this article is not the place to enter into detail about the development of sexual organs in the embryo, it should be pointed out that it is possible for a chromosomally male fetus to be born with a uterus and fallopian tubes in addition to normal internal and external male organs. Likewise it is possible for a chromosomally female fetus to develop a clitoris that looks like a penis. Since embryologically the external organs are the last stage of sexual development to take place, it is not uncommon for the external genitalia to be left unfinished, neither fully masculinized nor fully feminized. Inevitably many individuals are assigned the wrong sex if only because the unfinished state of either sex looks remarkably like that of the other in infants (Money, 1968; Money et al., 1955, 1961). Adding complications to the picture are the nature and influence of hormones upon both the developing fetus and the individual after birth (Henry, 1963).

But not all sexual behavior is biologically determined. One of the discoveries of those who researched hermaphroditism was the fact that children who had been assigned the wrong sex at birth usually preferred to keep their mistaken sexual identity when their true biological sex was discovered. In short, there was a renewed emphasis on the sexual socialization process, a rapidly expanding area for research in child psychology today. Present evidence indicates that much of sex behavior is taught (Money and Ehrhardt, 1972). Thus, though we are no closer to giving an answer as to why some people are homosexual and others heterosexual today than we were 70 years ago, the answer seems far more complicated than it once did, and to accept a belief in the pathological nature of some behavior on the basis of our present understanding is unscientific.

It was not the evidence, however, which forced the American Psychiatric Association to change its diagnosis, since a significant number still hold that homosexuality is an illness and that it can be cured. Rather it was a political factor, pressures put upon the medical community by forces interested in changing the diagnosis. The basis for such organized pressure had already been prepared by the efforts of the eugenicists, by the advocates of birth control, by the growth of zero population, by various segments of the women's movement who fought both for contraception and abortion as well as for the acceptance of female sexuality.
Sex reformers such as Ellis and Hirschfeld and sex reform organizations such as the International Congress for Sex Reform had also been important. The key ingredient, however, appears to have been pressure by the organized gay community. Organization of the homosexual community was lacking in England and America until after World War II and it then labored under severe handicaps for at least a decade. The impetus for the movement started in Germany in the last decade of the nineteenth century and centered around the person of Magnus Hirschfeld. The result was a well-organized effort to change the laws with regard to homosexual activity, although much of the nominal leadership seemed to be not in the hands of homosexuals but heterosexuals. The same thing happened in the United States where the early efforts to change the laws and ultimately the diagnosis were made by established groups such as the Society of Friends, the American Law Institute, and the American Civil Liberties Union. Only when the groundwork had been laid could the gays themselves surface, and to be most effective a number had to publicly proclaim themselves as homosexual, in the process emphasizing their own “normality.” This obviously proved difficult to do since many of those who identified themselves prematurely, such as André Gide, suffered considerable ostracism. Before gays could feel free to proclaim their identity, they had to have their own organizations where they could at least perceive peer group support. In the United States following World War II the movement slowly proliferated from Mattachine to One, to the Daughters of Bilitis, to the Society for Individual Rights, to Gay Academics, to Metropolitan Community Church. Not only did the organized activity of the gay militants bring about change in a so-called scientific diagnosis, but they also pressured the professional societies and journals to begin to deal with the question.

CONCLUSION

If the changing opinions about homosexuality can be used as an illustration of what brings about scientific change, it would seem that, at least in areas of strong prejudices, a variety of nonscientific factors has to be considered. Nineteenth-century medicine accepted traditional ideas about homosexuality with only a technical change in explanations—i.e. putting it in medical (a disease) rather than religious (a sin) terms. This new medical model of sexuality was challenged both externally and internally but a vested-interest group, the psychiatrists, held preeminence in the field. The fact that a diagnosis of pathology had been codified meant that it was not simply enough to undermine the scientific basis of such a diagnosis and that actual political pressure had to be applied. There was simply too much of a vested interest in the old diagnosis, and generations of psychiatrists had been content to label their patients as pathological. To change such a diagnosis meant admitting an error, an error that had at the least subjected large numbers of individuals to
psychic trauma. Though much of the information for changing such a diagnosis was available by the 1920s, to bring about a change it was necessary to turn to political action, and political action was dependent upon a change in public opinion toward nonprocreative sex. This in fact has taken place during the last three decades. While many psychiatrists and physicians still remain convinced that homosexuality is pathological, they no longer have the support of their professional associations, and for several decades they have not had any basic scientific data to support their case. As newer generations of psychiatrists emerge, with little vested interest in the past, the new definitions of sexuality will become increasingly widely accepted. In sum when a scientific hypothesis corresponds so closely to preconceived opinions as that dealing with homosexuality did, changes in attitudes of the scientists involved are dependent not only upon internal developments within a field but basic changes within society itself.

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