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WORLDWIDE EPIDEMIOLOGICAL TRENDS IN SYPHILIS AND GONORRHEA

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1. Fall and Rise in Incidence of Venereal Infections

A major recurrence of early infectious syphilis took place in most parts of the world during the Second World War, lasting into the immediate postwar period. This phase was followed by a rapid decline, which reached an all-time nadir during 1956-58 in most countries (Figures 1 and 2). Then came a new period of recrudescence, which still continues although with minor variations in reported cases in some countries in the last two to three years. Although cases of serious late syphilis are by no means rare, a decline of late syphilis, including cardiovascular and neurological manifestations, has been reported since the mid 1940's in most countries where statistics are available. This decline has occurred despite the traditional belief that increases in late complications might be expected 10 to 20 years after high incidence periods of early syphilis. The effect of penicillin treatment of early syphilis, preventing such a serious development, has been one of the great achievements of the antibiotic era. A general decrease in congenital syphilis since 1950 has also taken place, although in several countries the incidence has remained stationary at a relatively low level - with occasional upswings (Robinson, 1969) - suggesting that control of syphilis of the newborn could be strengthened, notably in the maternal and child health part of public health programs.

Little information is forthcoming from developing countries in Africa and Asia, although WHO data show that early syphilis is also becoming more frequent in parts of Africa (e.g., Dahomey, Niger, Nigeria, Senegal) and in countries in the Far East (South Viet-Nam, Japan), and is epidemic in some urban areas in countries in South East Asia (e.g., Bombay, India). In Africa, as in Asia, this situation is the result of extensive migration, the enormous growth of the towns, and the breaking up of the traditional tribal and family structures.

Although the incidence trend of gonorrhea has apparently to some extent followed the pattern of early syphilis, the disease is reported to be from 3 to 50 times more frequent than early syphilis. We have selected data from several countries for purposes of illustrating reported recent trends (Figure 3, Table 1). There is a marked increase in most countries. The increase appears to be worldwide and already seven years ago was reported to affect 60 to 65 million people (WHO, 1963). When it comes to the seriousness of the disease, increasing incidence of gonorrheal complications, particularly in women, has also been observed (Rees and Annels, 1969; Loughlin, 1969). In some areas of developing countries, prevalence studies have shown gonorrhea and other urethritides to be endemic, e.g., in parts of Africa and the Far East (reports to WHO, 1960-1968). In several developed countries, reported gonorrhea is among the three most prevalent of the communicable diseases, e.g., in the Scandinavian countries, in England and Wales, and in France, and it is probably number one in the United States of America (O'Rourke, 1969). In some urban areas of India, venereal disease frequency is second only to parasitic diseases (Desai, 1969). Non-gonococcal urethritis has also increasingly become of epidemiological, as well as of diagnostic and therapeutic, importance in

several countries, e.g., Britain (Willcox, 1958a; King, 1970), France (Siboulet and Egger, 1967), and the Federal Republic of Germany (Meyer-Rohn, 1968). Trichomoniasis and candidiasis are widespread, particularly in patients with venereal disease, and conditions such as genital herpes have received increased attention. Finally, in regard to chancroid, lymphogranuloma venereum, and granuloma inguinale, these conditions are now reportedly rare in developed countries while remaining a problem in some developing areas.

There are recognized limitations of morbidity reporting of venereal diseases, depicting underreporting rather than overreporting of new cases by doctors and/or clinics to health authorities. Thus, in the United States of America, national surveys undertaken in 1963 and 1968 obtained the participation of more than 130,000 private physicians (71 per cent). The surveys showed that possibly one-third of the cases of syphilis and one-tenth of gonorrhea cases they treated were being reported (Cleeve et al., 1967; JAMA, March 16, 1970). The inadequacy of reporting can also be gleaned from current statistics in some countries where surveys were not undertaken. Thus in Hungary in 1962 only two cases of syphilis were reported in the morbidity statistics. During the same period 0.67 per cent seroreactors were diagnosed by mass screening, representing 634,508 serological tests. This is reported to correspond to an estimated 4,250 cases of syphilis (Foldvary and Karoly,1964).

Notwithstanding these limitations, the demonstrated fall and rise of syphilis and gonorrhea during the last several decades are believed to reflect at a lower level current true epidemiological trends. As a whole, there can be little doubt that syphilis is on the rebound and that gonorrhea is rapidly increasing in many areas, reaching epidemic proportions in some developed and developing countries.

2. The Changing Environment

This rise in incidence of early syphilis and notably in gonorrhea in recent years has - paradoxically - occurred during a period when important medical and public health progress has taken place. But we must keep in mind that, during this period, demographic, economic, behavioral, and other perspectives of society have been greatly altered. A climate of opinion has developed favoring sexual activities, facilitating spread of sexually acquired infections, and changing the ecology of these infections as a whole. The environmental changes which have taken place have also affected collateral social problems, such as addiction to drugs and alcohol.

The intensity of the epidemiological processes in infection acquired by sexual activity depends to a greater extent than in any other group of diseases on the balance between the complex human and environmental forces which facilitate or restrain the spread of disease. We have attempted to visualize these multiple interdependent forces (Figure 4). Their shifting aggregate weight may in one period drive the epidemiological pendulum in the direction which facilitates spread and high incidence of disease, and in another

period, in the direction which favors control and possible "eradication." In the following we have attempted to analyze some of these forces in detail in relation to (a) demographic developments, (b) socioeconomic and behavioral changes, and (c) medical and public health aspects.

2.1 Demographic Developments

These include more susceptibles having become available for infection due to rapidly increasing populations.

The world population increased by approximately 225 million during each of the decades 1930-1940 and 1940-1950; the rise was 500 million between 1950-1960; and a further rise of 600 million will have taken place by the end of 1970 (United Nations, 1967). Furthermore, the young sexually active age groups now represent a much larger proportion of the population. At the same time there is a longer sexual life span due to earlier maturity (the age of the menarche in Great Britain has fallen at a rate of 4.6 months a decade for the past 100 years - Wilson and Sutherland, 1960) and possibly to the adjournment of the menopause by gestogens and to increased longevity in both sexes. This increased number of susceptibles which has become available is only one of many factors concerned in the ecology of venereal diseases, as will be discussed later.

The adverse influence of these demographic factors on the prevalence and spread of venereal disease is likely to increase in the future; the only possible brakes have been considered to be family limitation and the prevention, and possibly also termination, of illegitimate pregnancies (Willcox, 1969).

2.2 Socioeconomic and Behavioral Developments

The factors concerned can be grouped under three headings: (a) those leading to the breaking of previously "closed" sexual circles, resulting from increased population mobility, and to greater opportunities for casual sexual encounter; (b) increased promiscuity; and (c) ignorance. All are interwoven.

2.2.1 Increased Population Mobility

(a) Industrialization and Urbanization

Few factors have changed our environment and affected conditions of life as much as has the immense technological progress, with rapid industrialization and urbanization, characteristic of the past decade. Industrial activity increased by 50 per cent between 1956-1966 in some developed countries, and by as much as 200 per cent in some developing countries of the Americas in the same period (United Nations, 1966). The majority of movers into urban areas are young people (Loeb, 1960), and there is more female employment than formerly. Thus in the United States of America the percentage of the total

population below 20 years of age living in cities increased from 50 to 75 during the years 1950-1969 (Shilch, 1969). New physical, mental health, and social situations have arisen in urban, and to some extent also in rural, areas - tending to facilitate sexual activity. The greater frequency of venereal disease is now more often referable to easy casual encounters, promiscuous behavior, prostitution, and homosexual practice in agglomerations of people in rapidly growing centers and metropolitan areas (Hocker, 1962; Asiyo, 1968) with influx from rural areas.

All occupational groups are now represented among venereal disease patients in some countries (Oslo Helseraad, 1968). In industrial societies well-paid workers prevail (Schofield, 1965; Juhlin, 1968a; Smidhurst, 1969; Loughlin, 1969), emphasizing affluence as facilitating spread of venereal disease. This is in contrast to other countries where more venereal disease is reported in deteriorated urban areas or slums among sociably disorganized groups with low socioeconomic standards (Desai, 1969; USPHS, 1967). It is clear that more systematic health education efforts, with emphasis on prevention of disease, are indeed needed by health administrations, both in relation to city planning (Capinski, 1966; Ragon, 1966; Amer. J. Publ. Health, 1968) and to expanding urban agglomerations, as well as among socioeconomic groups of low standards in the Americas, as well as in other Regions.

(b) Itinerant Populations

Migrating labor groups have become characteristic of our times, both within countries and within continents (Winikoff, 1964) as a result of urbanization, industrialization, and economic development. It has been shown in Europe that British, French, and Swiss immigrants rarely import venereal disease directly, but once settled in the host country higher venereal disease rates are found among immigrants than in the home population (Lundt, 1963; Switzerland, 1966; Martin-Bouyer, 1967; Willcox, 1966; Bijkerk, 1969). Problems of housing, loneliness, language adjustment, race, and so on, are involved. In other regions, venereal diseases among migrating labor groups have caused more immediate epidemiological concern, e.g., the Mexican/United States of America border problem to which a great deal of attention has been paid in recent decades (ASHA, 1968).

Among the so-called "chronic" itinerants like seafarers, veneral disease has been shown to be 16 to 20 times more common than in land populations (Eng and Jensen, 1960; Guthe and Idsøe, 1964). Not unexpectedly, infections are frequently acquired abroad, in some instances more than half, e.g., in Britain (Schofield, 1965) and France (1967). The approximately one million men employed in the overseas shipping industry and the additional five million in deep water shipping (Graz, 1968) suggest the increasing need for international cooperation concerning the health of seafarers in these relatively small groups which are of such economic importance in all Regions of the world, not the least in the Americas. Particularly are improvements necessary in the

practices relating to the International Agreement of Brussels under the administration of the World Health Organization. A recent study among 100 ocean-going ships showed that only one carried the World Directory of VD Treatment Centers at Ports (CIRM/WHO, 1970).

Other high risks groups today, also occupationally engaged in international travel, are drivers on international routes, flight crews, journalists, and commercial travellers (Bijkerk, 1969). As a result of widespread improvements in living standards, great numbers of people are involved. Tourism and international travel, for reasons of business or to national and international conferences, exhibitions, and so on, have reached unprecedented proportions by all media, whether by land, sea or air, creating a new atmosphere with increased opportunities of sexual contact and increased probability of acquiring venereal disease. Data from several countries indicate the extent of this problem. For example, there is evidence that in 1966 in Sweden more than 20 per cent (Sveriges Officiella Statistikk, 1967) and in the Netherlands more than 25 per cent (Bijkerk, 1968) of the new cases of syphilis are acquired abroad, exclusive of the import by seafarers. In the United States of America in 1968 contact information forms originated from, or were sent to, 60 other countries around the world (ASHA, 1969).

With even further rapid expansion of international travel clearly expected in the commencing era of the "Jumbo Jet," its adverse influence on VD control can only also be expected to increase. The need, therefore, of more intensified (and more rapid) international contact-tracing machinery will become increasingly felt for this reason.

Finally, among mobile populations inherently exposed to changing environments, mention must be made of the armed forces. An eight-fold increase of seroactivity to syphilis was recently found in soldiers in a country in the Americas as compared to preinduction examination (Scarpari and Zamperlin, 1965), suggesting that epidemiological casefinding in VD control can only succeed by better cooperation between military and civilian health authorities (Arya and Bennett, 1967; ASHA, 1969). The likelihood that venereal disease rates will rise and epidemics occur during actual war conditions is historical (Gjessing, 1956). This has recently been confirmed in several "disturbed areas" of the world. Under service conditions in the Far East (Viet-Nam), VD rates of some 280 per 1,000 annual strength have been reported (Navy Times, 1967) and even higher over shorter periods of time. In one military unit in Korea, for example, a gonorrhea rate representing no less than 700 per 1,000 per year has been experienced (WHO, 1970). Morever, such situations facilitate the development of the resistance of the gonococcus to antibiotics (WHO, 1970) and thereby may pose a threat to other countries geographically remote.

2.2.2 Widening of Sexual Circles by Increased Promiscuity

During the postwar years changing moral and behavioral codes, female social, economic, and psychological emancipation, and general economic affluence

have increased sexual promiscuity and contributed to what some have called the "Sexual revolution" (Time, 1964; Brit. Med. Ass., 1964; The Observer, 1968; Shilow, 1969).

(a) Change of Attitudes

In many countries the Victorian outlook on sexual comportment and the "double standard" of the past have undergoone changes in recent years. Social attitudes to sex have become overtly permissive, and a decisive shift has occurred in behavioral and moral codes in countries previously considered to have a paternalistic family pattern (Time, 1964, 1969; BMA, 1964). Although reportedly not in all, e.g., continental China (Hai-Teh, 1968), such attitudes have led to more indiscriminate behavior, both heterosexual and homosexual, with consequent added difficulties of contact tracing and with more extramarital intercourse. For example, in a study in India the percentage of married males among cases of early syphilis varied between 17.0 and 68.5 (Desai, 1969), while in another (Netherlands) at least 28 per cent were married men infected by the married partner (Bijkerk, 1969).

Promoted by these changing attitudes, further direct encouragement of promiscuity has come from increased emphasis on sex in the ever more influential mass media and in advertising (Gagnon, 1964; Bowle, 1968).

(b) Removal of Restraining Influences

At the same time there has been a diminution of the restraining influences of religion, family, and public opinion (the latter being influenced by more divorces, broken homes, and high illegitimacy rates), by lessening fear of both venereal disease (from the availability of simple effective treatments) and of pregnancy (following the introduction of oral contraceptives and intrauterine devices). Moreover, there is the added VD risk from lessened use of the condom which, unlike the 'pill' and the IUD, offered protection against venereal disease. There is finally also the more tolerant attitude towards regulated abortion in some countries, althoug this may vary somewhat from country to country and from region to region.

Thus, in sexual life - be it for personal contentment or for family planning purposes - the avoidance of having children has become the responsibility of the female, while previously the use of less reliable methods was most often a male responsibility (Gagnon, 1968). It should be noted that there is evidence that the removal of fear of pregnancy may encourage sexual activity, promote multiple sexual contacts, and lead to more venereal disease (Huxley, 1968; Cohen, 1970; Hewitt, 1970), particularly among the young (Juhlin, 1969; Juhlin and Liden, 1969). There is also evidence of more direct side effects of the use of modern contraceptives. For instance, the use of IUD's may lead to acute pelvic disease from salpingitis in females infected with gonococci (Morton, 1969), and steroid pills foster C. albicans vaginitis (Catterall, 1966). An estimated 17.5 million women in Western societies are now "on the pill" (Population Council, 1969) - 1.5 million in Britain alone.

More than half of the world population today was born after the Second World War and has, to a varying degree, been exposed to the removal of many restraining influences on sexual behavior. Many say that health education should affect significantly at least the number willing to risk infection in the new circumstances. We know, however, that health education may not markedly change established norms of behavior. For instance, the increasing tobacco consumption in many countries bears witness to its limited direct effect on the prevention of pulmonary cancer by reduction of cigarette smoking. We also know that promiscuous persons, when informed of the dangers of venereal disease and of side effects of treatment, continue to expose themselves. This is indicated by the high incidence of repeated infections in the same persons. On the other hand, it is recognized that it is possible, by dispelling ignorance, to induce many patients to seek treatment earlier than would otherwise be the case. It is less certain to impress some with the value of discrimination in choice of partners and of available prophylactic measures. In this context it is relevant that very high venereal disease rates are sometimes observed among the best educated (Arya and Bennett, 1967).

2.3 High Risk Groups

2.3.1 Young People

The rising venereal disease rates in young people of both sexes has attracted attention in recent years. The relative increases in this group have sometimes been significantly greater than for the population as a whole (Rosenblatt and Kabasakelian, 1966). A WHO study in nine different countries showed that gonorrhea and acquired syphilis between the ages 15 and 19 in relation to all other age groups, had - almost without exception - an equal distribution of reported diseases among young females and males as contrasted with older age groups. Studies indicate there is extensive promiscuity, but the young people concerned often have educational and social problems (Laird, 1963; Biegel, 1964; Ekstrom, 1969, 1970; Lourrie, 1966; Juhlin, 1968a, 1968b). Other studies have shown a certain correlation in special groups between venereal disease and other social pathology, such as delinquency, illegitimacy, and drug taking (BMA, 1964; Nicol, 1964; Inghe and Inghe, 1967; Rawlins, 1969), indicating that venereal disease is a symptom of "social disease" in problem groups (Serise et al., 1964) of urbanized societies both in developing and developed industrial areas (Asiyo, 1968) and that the route of infection is from one group to another (Karolyi, 1969). For example, primary and secondary syphilis in a 14-year old girl in a county of the United States of America led to the discovery of early syphilis in 17 individuals of an average age of 10.1 years (United States of America, 1970). In Brisbane, Australia, out of a small group of 11 females with early syphilis, eight were teenagers (Smithhurst, 1969) of lower socioeconomic groups. Repeated infections are particularly common in such groups (Karolyi, 1969).

A companion phenomenon of today is the high rate of venereal disease among some university students. In developing countries, e.g., in Africa and the Americas, some 25 to 30 per cent have been reported to be infected each year (Arya and Bennett, 1967; Willcox, 1967). But high rates also are reported in some European welfare states, e.g., Sweden, where 34 per cent of female student patients attending a university student clinic had gonorrhea (Juhlin, 1969). In Britain, settlement problems of foreign students have been found to be involved (Morton, 1966). It stands to reason that during the "student explosion" of recent years in several regions of the world, climates are created which favor spread of venereal infections (Juhlin, 1968b). This has been described inter alia during the student manifestations in France in recent years (Le Monde, 1968).

Despite the contemporary emphasis on sex, the level of knowledge of venereal infection in the young is remarkably incomplete (Sweden, 1969; Dalzell and Ward, 1970), as shown in studies in Britain (Schofield, 1965), in Sweden (Juhlin, 1968b), in France (Many et al., 1967), in Hungary (Farago, 1969), and in some countries in the Americas (e.g., United States of America) (Josephson, 1969). Up to 50 per cent of those involved in these studies had little or no knowledge of venereal disease. It would seem that more attention should be focused on effective health education as well as family life education (ASHA, 1968) and that both parental and school responsiblities should be more extensively engaged (Brown, 1967). The first step is to equip the teacher and to educate the parents as to their duties in this respect (WHO, 1970). Particular attention should be paid to risk groups (Brown, 1967), where stresss should be put on behavior aspects rather than on moral problems (Dalzell-Ward, 1969). The role of the public health nurse and social worker in cooperation with doctors, teachers, and youth organizations in such educational programs is of obvious importance (Szasz, 1969; Novotny, 1969). Finally - and surprisingly to some - there is need for health education among the medical profession concerning the control methods of venereal diseases, as recently pointed out (Webster, 1966; IUVDT/WHO Study, 1970). A close cooperation between serologists and public health authorities has thus shown some results in New Zealand (Platts, 1969).

2.3.2 Patterns of Prostitution

In our current preoccupation with new behavioral and environmental influences we should, however, not overlook the need also to appraise the more classical patterns of prostitution and their role in the spread of venereal diseases in modern times.

The United Nations Convention of 1959 for the suppression of the Traffic in Persons and Exploitation of the Prostitution of Others (the so-called Eleanor Roosevelt Convention), to which most countries have subscribed, led to the official suppression of brothels and prostitution in the classical sense. But this effort did not put an end to the "oldest profession," although

the classical patterns have to some extent altered. First, sale of sex by women now often aims at the obtaining of extra luxuries and consumer goods (French, 1955; Hartmann, 1967), although some "bread and butter" prostitution remains in both developed and developing countries (WHO, 1968). Secondly, there has been a shift of methods: motels, hotels, camps, bars, restaurants, caravans, holiday beaches, exhibits, fairs, and so on are now active operation fields for sexual encounter; and call-girls and car-prowling girls have become established features of today's metropolitan life (Weier, 1969). Thirdly, demi-prostitutes, "luxury prostitutes," and "good-time" girls engaged in normal jobs now compete with the professionals in the sex market (Nicol, 1964). While periodic medical examination and control of prostitutes continues to be attempted in some developed countries (e.g., Germany), this can apply to only a fraction of those of epidemiological interest. The prevalence of venereal disease in prostitutes, demi-prostitutes, and good-time girls is, therefore, estimated to be relatively high, varying from 10 per cent to as much as 90 per cent in different material published (Willcox, 1958b; Wren, 1967). More than 30 per cent of males named prostitutes as contacts in studies in Thailand (Suthisomboon, 1965), 48 per cent in Holland (Bijkerk, 1969), and up to 90 per cent in some countries in the Western Pacific (WHO, 1968). It is obvious that epidemiological tracing of contacts and sources of venereal diseases is complicated under the circumstances and has not been crowned with any great success nationally or internationally.

A reorientation of outlook concerning prostitution is being attempted in some countries (Sacotte, 1969; Weier, 1969). Thus the Street Offences Act of 1959 in Great Britain actually accepts prostitution in its widest sense, if not causing a public nuisance. In the Federal Republic of Germany, so-called "Eros" centers (e.g., Hamburg) permit sexual encounter without exploitation of the women. Attempts to "get prostitution off the streets" have also been discussed in other countries, e.g., Switzerland (Journal de Genève, 1968). It is possible that the changing social attitude to sex and the prevailing climate of opinion concerning sexual behavior may lead also to a reorientation in regard to recognition of establishments for sexual encounter as part of the ever-expanding "pleasure trade."

2.3.3 Male Homosexuals

The increasing role of male homosexuals in the spread of syphilis has been much discussed in recent years, e.g., in Sweden, Denmark, France, and Britain (Laird, 1962; Jefferiss and Willcox, 1963; Schmidt et al., 1963; Hooker, 1964; Durel and Pellerat, 1966; Brit. Med. J., 1967; Racz, 1969; Neser and Parrish, 1969), while they are less commonly identified in gonorrhea (Nicol, 1960; ASHA, 1968). Homosexual contacts named by infected persons may range from 10 to 90 per cent in selected material (Price, 1969). A survey in Holland showed that almost half the patients with early syphilis were homosexuals (Bijkerk, 1969). Each homosexual can be extremely promiscuous in different social strata, and in addition some have heterosexual contacts; as a risk

group, therefore, they pose difficult epidemiological problems (Racz, 1969). Some studies have shown that homosexuals have five times higher rates of reinfections than heterosexual patients (Racz, 1969). It has been contended that the recent legalization in some countries (e.g., Britain, following the Wolfenden Report of 1957), permitting homosexuality between consenting adults, may possibly facilitate contact-finding (Bloch, 1964).

2.4 Medical and Public Health Aspects

It has been recognized that penicillin therapy was an important cause in reducing the incidence of early syphilis in the first decade after the Second World War. But this could not prevent the recrudescence of the disease, notwithstanding the fact that penicillin has not lost its treponemicidal power, that serological diagnosis has been improved (e.g., TPI, FTA) and that new and more effective epidemiological methods have come into use (reinterview by trained investigator - Capinski and Urbanezynk, 1970, cluster-testing, preventive treatment of contacts, and so on). In the post-war decade there was a widening use of penicillin for a multiplicity of medical conditions apart from syphilis. There was also an increasing misuse of this antibiotic in the population at large. This is believed to have prevented many syphilitic infections from arising in individuals actually exposed to T. pallidum - because of antitreponemal penicillin levels in their blood and tissues at the time of exposure - or to have cured unsuspected early disease (T. pallidum is one of the most penicillin-sensitive microorganisms known).

This "happenstance" preventive effect of penicillin has been quantitatively estimated to have contributed to the sharp decline in the incidence of early syphilis (Schamberg, 1963; Danehower and Schamberg, 1963) after 1950. Conversely, there has - during the recrudescence period of syphilis after 1957-1958 - been a significant diminishing of this preventive effect, resulting from its more prudent use because of the allergic side-reactions observed, and from the availability of other antibiotics less treponemicidal than penicillin.

Previous chronic suppressive metal therapy in syphilis patients often resulted in prolonged infection-immunity and long-standing seroreactivity. In contrast, adequate penicillin therapy, with apparent cure of early syphilis, usually rapidly suppresses the immunity-producing mechanism in the individual. As a consequence, resistance to reinfection becomes of relatively short duration and "ping-pong" and "repeater" syphilis have been observed much more frequently in the penicillin era than after metal therapy. Reinfection rates in clinic patients now range from 1.6 to 8.2 per cent (Degos and Ebrard, 1957; Jefferiss and Willcox, 1963; ASHA, 1968). These factors have contributed to the recrudescence of early syphilis in the present decade.

It has been suggested that acquired immunity resulting from untreated or inadequately treated infection in one generation and absent in the next may affect the number of susceptibles available and that this may play a role in the "cyclic" variations observed in the incidence of syphilis (Haustein, 1927). From a world standpoint it is, however, probably more important that the extensive WHO-assisted mass penicillin campaigns against childhood yaws throughout the tropics in the last 20 years have created millions of new susceptibles to syphilis, due to the loss of protective cross-immunity from yaws possessed by the previous generation (Guthe and Idsøe, 1968).

Concerning gonorrhea, penicillin (and possibly streptomycin) therapy has contributed to the somewhat reduced incidence of this disease during the first postwar decade, but not to the same extent as in early syphilis. The substantial reduction of complications in male gonococcal infections was, however, conspicuous. In this period the unknown "penicillin fall-out" may have had a less preventive effect in the population at large than in syphilis, since the gonococcus is less sensitive to penicillin than is the treponeme and gonorrhea has a much shorter incubation period than syphilis. The subsequent development of resistance to penicillin and some other antibiotics of circulating strains of N. gonorrhea in several areas of the world is another factor in the increased incidence of the disease, particularly in high promiscuity areas, e.g., parts of the Far East, where one in three cases may fail to respond to large doses of penicillin (WHO, 1970).

Questions are also being posed as to whether both syphilis and gonorrhea are becoming "milder," less obvious diseases, under antibiotic impact (Willcox, 1970). But the easy, rapid, effective, and relatively safe, individual antibiotic therapy both in syphilis and gonorrhea contributed to the changing climate of opinion concerning sexual behavior and venereal diseases. Previous fear of syphilis and gonorrhea as dangerous diseases (Kinsey et al., 1948, 1953) waned (Catterall, 1964; British Medical Association, 1964; Juhlin, 1968a); the public assumed an attitude of unconcernedness (King, 1958); doctors and health administrations were lured into indifference concerning the need to maintain adequate control facilities in view of the falling incidence a decade ago (Rozina and Chaica, 1969; WHO, 1953, 1954, 1964). Only recently is there indication of renewed interest in regard to the venereal disease problem (WHO, 1968a, 1968b). The selection of venereal diseases as a discussion at this Conference concerning the Americas is an encouraging sign in this respect.

Ambulant treatment of venereal diseases is now undertaken in many countries, not only by recognized specialists and in clinics, but also by general practitioners. Failure by the latter (and by laboratories) to cooperate with the health authorities concerning epidemiological efforts is yet another cause of the upsurge of infectious syphilis and gonorrhea (Degos and Delzant, 1963; Curtis, 1963; Adams, 1967). Thus, in Sydney, Australia, in 1965 it was estimated (Adams, 1967) that only 9.1 per cent of the total cases of

venereal disease treated by private doctors was reported to the health authorities. In 1967, in the United States of America, 37.8 per cent of all cases of syphilis reported to the Public Health Service originated from private doctors. A similar situation is encountered in Central and South America.

In many countries public health legislation has in the past provided for special activities against venereal disease. However, conditions considered to be "venereal" often differ, and stages of disease are differently defined in different countries; moreover, free examination and treatment facilities are not always provided to the same extent, and official provision for epidemiological contact-finding to assist private doctors varies widely. But with or without special legislation the upward or downward epidemiological trends of syphilis and gonorrhea are apparently affected in a similar way in different countries at about the same time (Willcox, 1964).

3. Summary and Conclusions

We have attempted in this symposium to appraise the climate of opinion in which a rising trend of syphilis and gonorrhea - and possibly also of other infections acquired sexually - has taken place in the past decade and apparently continues to take place in spite of the national and international measures which have been applied. We have endeavored to assess the major interlocking forces concerned in the spread of infection in rapidly changing environments in developed and developing countries. We must conclude that these rapid changes have created new behavioral and social attitudes with consequent risks of more disease being acquired by sexual activity. Although important medical and public health developments have taken place in the same period, these have been outbalanced by other multiple environmental forces which facilitate the spread of venereal disease, the adverse effects of which, being beyond the control of the physician, are likely to continue in the future.

Medical and public health services have, to a varying degree, failed to meet the present disturbing situation. The adequacy - or rather inadequacy - of these services in the future must be considered in relation to the needs anticipated. To curb the rising incidence, health administrations must provide more trained personnel and facilities not only for free diagnosis and treatment but also for applying existing and improved techniques of case-finding (including epidemiological contact-tracing) and "risk-group" screening much more actively than now. Intensified health education and family life education need to be provided for the young with a view to prevention, and to ensure that those infected can quickly obtain treatment.

Above all, intensified research is required on many problems, particularly in the biochemical and immunological fields. It can now be hoped that this might lead not only to a simplified serological screening test for gonorrhea (the absence of which in a large part accounts for the runaway rise in its incidence as compared to syphilis), but also perhaps ultimately to an immunizing procedure against treponemal diseases, such as syphilis. Research in these areas is now advancing along rational lines in the United Kingdom, United States of America, and Poland.

Progress cannot be made against these diseases without interdisciplinary cooperation: cooperation of the venereologist with those in other fields of medicine (e.g., obstetricians, gynecologists) and with the general practitioner; cooperation of these with the public health workers and epidemiologists; cooperation with the research worker; cooperation of all of these with the teacher, health education, and social worker; and cooperation with voluntary agencies concerned with the young. Such cooperation must be forthcoming, not only at the patient and institution level, but also on an interstate and national basis. One may also ask if an improved climate of opinion favoring such cooperation internationally may also gradually develop, in recognition of the fact that epidemiological communications and investigations are now required between countries in approximately half of the reported cases of syphilis and many more in gonorrhea.

The supreme importance of transfrontier cooperation is illustrated by a recent report of a Californian prostitute with secondary syphilis who kept a diary. It was found that among some 310 males who were involved as contacts, 168 - all long-distance truck drivers - were traced. This threat of spread of disease extended over 34 American States, Canada, and Mexico. This epic of epidemiology was written by a Staff Reporter and improbably appeared in a periodical seldom seen by physicians, namely The Wall Street Journal (1970) - presumably because it concerned inter-State commerce!

Annex

(ILLUSTRATIONS AND REFERENCES WILL BE
DISTRIBUTED SEPARATELY)

REFERENCES

Adams, A. (1967) Med. J. Austr. 1, 145-51

Amer. J. publ. Hlth, 1968, 58, 817-9

American Social Health Association (1968) Today's VD Control Problem, A. S. H. A. New York

American Social Health Association (1969) Today's VD Control Problem, A. S. H. A. New York

American Social Health Association (1970) Today's VD Control Problem, A. S. H. A. New York

Arya, O. P. & Bennett, F. J. (1967) Brit. J. vener. Dis. 43, 275-9

Asiyo, P. (1968) Prostitution Problems peculiar to countries in Process of Development, Social Hygiene Quarterly of the Association for Moral and Social Hygiene in India, April 1968

Balina, L. M. et al (1967) Paper presented to XIII Int. Congr. Dermatology, Munich, 1967

Barnhoorn, J. A. J. (1956) In: Maritime Venereal-disease Control, World Health Organization, Geneva, 94-7

Beigel, H. G. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 399-406

Bijkerk, H. (1968) Communication to WHO

Bijkerk, H. (1969) The occurrence of venereal disease in the Netherlands, 1967, Staatsnitgverig's Grauenhace

Bloch, H. A. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 412-8

Bowle, J. (1968) England: A Portrait, Readers' Union, Ernest Benn, London

Brandao, F., da Cruz Sobral, F. & da Fonseca, A. (1965) Proceedings of the XXIV General Assembly and Technical Meeting of the International Union against the Venereal Diseases and the Treponematoses, Lisbon, 197-202

British Co-operative Clinical Group (1970) Brit. J. vener. Dis. 46, 69-75

British Medical Association (1964) Venereal Disease and Young People, B. M. A., London

Brit. med. J. (1967) 2, 5-6

Bron, L. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 419-23

Brown, W. J. (1967) Milit. Med. 132, 316-7

Burgess, J. A. (1966) Brit. J. vener. Dis. 42, 116-8

Burton, J. (1968) Int. J. Hlth Educ. 11, 13-17

Capinski, T. Z. (1966) WHO unpublished working document WHO/VDT/66.37-WHO/HE/66.1

Capinski, T. Z. & Urbanczyk, J. (1970) Brit. J. vener. Dis. 46, 138-40

Catterall, R. D. (1964) The Venereal Diseases, Evans Brothers Ltd., London

Catterall, R. D. (1966) Lancet, 2, 830-1

Centro Internazionale Radio-Medico/World Health Organization (1970) In preparation

Cleere, R. L., Dougherty, W. J., Fiumara, N. J., Jenike, C., Lentz, J. W. & Rose. J. Amer. Med. Ass. 202, 941-6

Cohen, L. (1970) Brit. J. vener. Dis. 46, 108-10

Curtis, C. (1963) J. Amer. med. Ass. 186, 46-9

Daily Express (1970) 31 March, London

Dalzell-Ward, A. J. (1969) Med. Offr. 121, 3-8

Dalzell-Ward, A. J. (1970) BJVD 46, 159-161

Danehower, W. F. & Schamberg, I. L. (1963) Arch. Derm. Syph. (Chic.) 88, 930-4

Degos, R. & Delzant, O. (1963) Vie Méd. Paris, 44, 330-40

Degos, R. & Ebrard, G. (1957) Bull. Soc. franç. Derm. Syph. 64, 363-6

Desai, S. C. (1969) Indian J. Derm. Venereol. 35, 271-96

Durel, P. & Pellerat, J. (1966) Maladies vénériennes, Fouchet, Paris

Eng, J. & Jensen, R. A. (1960) Nord. Med. 64, 1285-8

Ekstrøm, K. (1964) Acta Psychiat. Scand. 40, Suppl. 180, 241-3

Farago, L. (1969) WHO unpublished working document INT/VDT/69.247

Finland, M. (1969) In: VD - The Challenge to Man, American Social Health Association, New York, 57-64

Fleming, W. L., Brown, W. J., Donohue, J. F. & Branigin, P. W. (1970) J. Amer. med. Ass. 211, 1827-30

Foldvari, F. & Karolyi, S. (1968) Communication to the IUVDT

France (1967) Communication to WHO from the French Ministry of Foreign Affairs

French, E. (1966) Brit. J. vener. Dis. 31, 113-6

Gagnon, J. H. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 424-30

Gagnon, J. H. (1969) Int: VD - The Challenge to Man, American Social Health Association, New York, 17-23

Gjessing, H. C. (1956) Brit. J. vener. Dis. 32, 86-90

Graz, L. (1968) "On the great waters", World Health, January-February 1968

Guthe, T. & Idsøe. O. (1964) Tid. norske laegeforen. 84, 1262-8

Guthe, T. & Idsøe. O. (1968) Brit. J. vener. Dis. 44, 35-48

Hai-Teh, Ma (1966) China's Med. 1, 52-63

Hartmann, G. (1967) Boliger og Bordeller, Rosenkilde og Bagger, Copenhagen

Haustein, H. (1927) Handbuch der Haut-und-Geschlechtskrankheiten . 22. Julius Springer, Berlin, 838

Hertoft, P. (1968) Unge Maends Seksuelle Adfaerd Viden og Holdning, 1, Akademisk Forlag, Copenhagen

Hertoft, P. & Ekstrøm, K. (1967) Paper presented to the XXV General Assembly of the International Union against the Venereal Diseases and the Treponematoses, Munich, August 1967

Hewitt, A. B. (1970) Brit. J. vener. Dis. 46, 106-7

Hooker, E. (1962) Male Homosexual Life Styles and Venereal Disease, University of California, Los Angeles

Hooker, E. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 431-7

Huxley, A. (1968) Quoted by Bowle, J. (1968)

Idsøe. O. & Guthe, T. (1967) Brit. J. vener. Dis . 43, 227-43

Inghe, G. & Inghe, M. B. (1967) Den ofärdiga välfärden, Tidens Förlag-Folksam, Stockholm

Jefferiss, F. J. G. & Willcox, R. R. (1963) Brit. J. Vener. Dis. 39, 143-8

Josephson, E. (1969) In: VD - The Challenge to Man. American Social Health Association, New York, 24-32

Journal de Genève (1968) 9 août

Juhlin, L. (1968a) Acta derm. vener. 48, 75-81

Juhlin, L. (1968b) Acta derm. vener. 48, 82-9

Juhlin, L. & Liden, S. (1969) Brit. J. vener. Dis. 45, 321

Karolyi, I. (1969) WHO unpublished working document INT/VDT/69.253

King, A. (1970) Brit. med. J. 1, 451-7

Kinsey, A. C., Pomeroy, W. B., Martin, C. E. (1948) Sexual behaviour in the human male, W. B. Saunders & Co., Philadelphia & London

Kinsey, A. C., Pomeroy, W. B., Martin, C. E. & Gebbard, P. H. (1953) Sexual behaviour in the human female, W. B. Saunders & Co., Philadelphia & London

Laird, S. M. (1962) Brit. J. vener. Dis. 38, 82-5

Laird, S. M. (1963) Brit. J. vener. Dis. 39, 280-2

Loeb, M. (1960) Brit. J. vener. Dis. 36, 191-3

Loughlin, M. J. (1969) N. Z. med. J. 69, 195-8

Lourie, R. S. (1966) Arch. environmental Hlth. Chic. 12, 684-5

Lundt, P. V. (1963) WHO unpublished working doucment EURO-240/9.2, presented at the European Symposium on V. D. Control, Stockholm, 24-28 September 1963

Many, P., Reboul, E., Lapeyre, J., Boutet, B., Teillard, J., Jeanpierre, G. & Saliba, (1967) Proph. sanit. morale, 39, 273-81

Martin-Bouyer, G. (1967) Bull. I. N. S. E. R. M. 22, 1021-56

Medical Tribune (1968) International Division, 20 May

Meyer-Rohn, J. (1968) In: Current Problems in Dermatology, 2, Antibiotic Treatment of Venereal Diseases, Karger, Basel & New York, 154-67

Le Monde (1968)

Morton, R. S. (1966) Brit. J. vener. Dis. 42, 280-2

Morton, R. S. & Statham R. (1968) Brit. Med. J., 4, 623-625

Navy Times (1967) 8 March

Neser, W. B. & Parrish, H. M. (1969) Sth. med. J. (Bdham, Ala.), 62, 177-80

Nicol, C. S. (1960) Practitioner, 194, 345-9

Nicol, C. S. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 44-8

Novotny, F. (1969) C. S. Derm. 43, 330-3

The Observer, (1968) 18 February

O'Rourke, E. (1969) In: VD - The Challenge to Man, American Social Health Association, New York, 4-5

Oslo Helseraad (1968) Communication to WHO

Platts, W. M. (1969) Brit. J. vener. Dis. 45, 61-6

Population Council (1969) February

Price, E. (1969) Medical Aspects of Human Sexuality, 3, 67

Putkonen, T. (1969) Communication to WHO

Racz, I. (1969) WHO unpublished working document INT/VDT/69.248

Ragon, M. (1966) World Health, February-March, 6, 44

Rawlins, D. C. (1969) Brit. J. vener. Dis. 46, 93

Rees, E. & Annels, E. H. (1969) Brit. J. vener. Dis. 45, 205-15

Ridet, J. (1968) Report to WHO

Robinson, R. C. V. (1969) Arch. Derm. 99, 599-610

Rosenblatt, D. & Kabasakalian, L. (1966) Amer. J. publ. Hlth, 56, 1104-14

Rozina, L. A. & Chaica, A. A. (1969) Sovetsk. Med. 32, 91-4

Sacotte, M. (1969) Proph. sanit. morale, 41, 196

Scarpari, S. & Zamperlin, P. (1965) Ann. Sclavo, 7, 430-9

Schamberg, I. L. (1963) Brit. J. vener. Dis. 39, 89-92

Schmidt, H., Hauge, L. & Schønning, L. (1963) Brit. J. vener. Dis. 39, 264-5

Schofield, M. (1965) The Sexual Behaviour of Young People, Central Council of Health Education, Longmans, London

Sepetjian, M., Avon, P., Bondet, V. & Thivolet, J. (1967) Rev. Hyg. Med. Soc. 15, 541-6

Serise, M., Coudray, P., Freour, P., Martaguet, P., Renou, A. M. & Barrere, P. (1964) Rev. Hyg. Méd. Soc. 12, 575-606

Shiloh, A. (1969) In: VD - The Challenge to Man, American Social Health Association, New York, 38-42

Siboulet, A. & Egger, G. (1967) Paper presented at the XXV General Assembly of the International Union against the Venereal Diseases and the Treponematoses, Munich, August, 1967

Smithurst, B. A. (1969) Med. J. Austr. 2, 1143-6

Suthisomboon, K. (1965) Proceedings of the XXIV General Assembly and Technical Meeting of the International Union against the Venereal Diseases and the Treponematoses, Lisbon, 203-21

Sveriges Officiella Statistikk, 1967

Sweden (1969) Socialmed. T. 10, December

Switzerland (1966) Communication to WHO from the Service Fédéral de l'Hygiène Publique, August 1966

Szasz, J. (1969) Canad. J. publ. Hlth, 60, 429

Time, (1966) January 24, 42-7

Time, (1969) June 6, 18-19

United Nations (1966) Statistical Yearbook 1965, United Nations, New York

United Nations (1967) Demographic Yearbook 1966, United Nations, New York

USA (1970) Morbidity and Mortality, 19, No. 7, 74, United States Department of Health, Education & Welfare, Atlanta, Georgia

United States Public Health Service 1967) Venereal Disease Program Report, 1967, United States Department of Health, Education & Welfare, Atlanta, Georgia

Vignale, R. A. (1968) WHO unpublished working doucment INT/VDT/68.232

Vinikoff, M. R. (1964) Proceedings of the World Forum on Syphilis and Other Treponematoses, Washington, D. C. 1962, Public Health Service Publication No. 997, U. S. Government Printing Office, Washington, D. C., 125-7

Wall St. Journal (1970) March 30

Webster, B. (1966) Brit. J. vener. Dis. 42, 132-3

Weyer, F. (1969) Proph. sanit. morale, 41, 184

Willcox, R. R. (1958a) Acta derm. vener. 38, 215-9

Willcox, R. R. (1958b) Int. Rev. Crim. Policy, 13, 67-97

Willcox, R. R. (1964) A Textbook of Venereal Diseases and Treponematoses, William Heinemann Medical Books, Ltd., London, 89-126

Willcox, R. R. (1965) Current Med. & Drugs, 5, 3-20

Willcox, R. R. (1966) Brit. J. vener. Dis. 42, 225-37

Willcox, R. R. (1967) Report to WHO

Willcox, R. R. (1969) Paper presented to Medical Research Council Conference on Urethritis, December

Wilson, D. C. & Sutherland, J. (1960) J. Obstet. Gynaec. 67, 320

World Health Organization (1953) Chr. Wld Hlth Org. 7, 203-10

World Health Organization (1954) Treponematoses: A World Problem, Chr. Wld Hlth Org. 8, 37-114

World Health Organization (1963) Wld Hlth Org. Techn. Rep. Ser . 262

World Health Organization (1970) Report on the Second Regional Seminar on Venereal Disease Control, Manila, 1968

World Health Organization (1968a) A21/Technical Discussions/5

World Health Organization (1968b) World Health Situation, Third Report, Geneva

Wren, B. G. (1967) Med. J. Austr. 1, 847-9

FIGURE 1

REPORTED PRIMARY AND SECONDARY SYPHILIS 1950 - 1969

Yearly percentage variations of incidence rates using 1950 as reference (100%) if not otherwise indicated

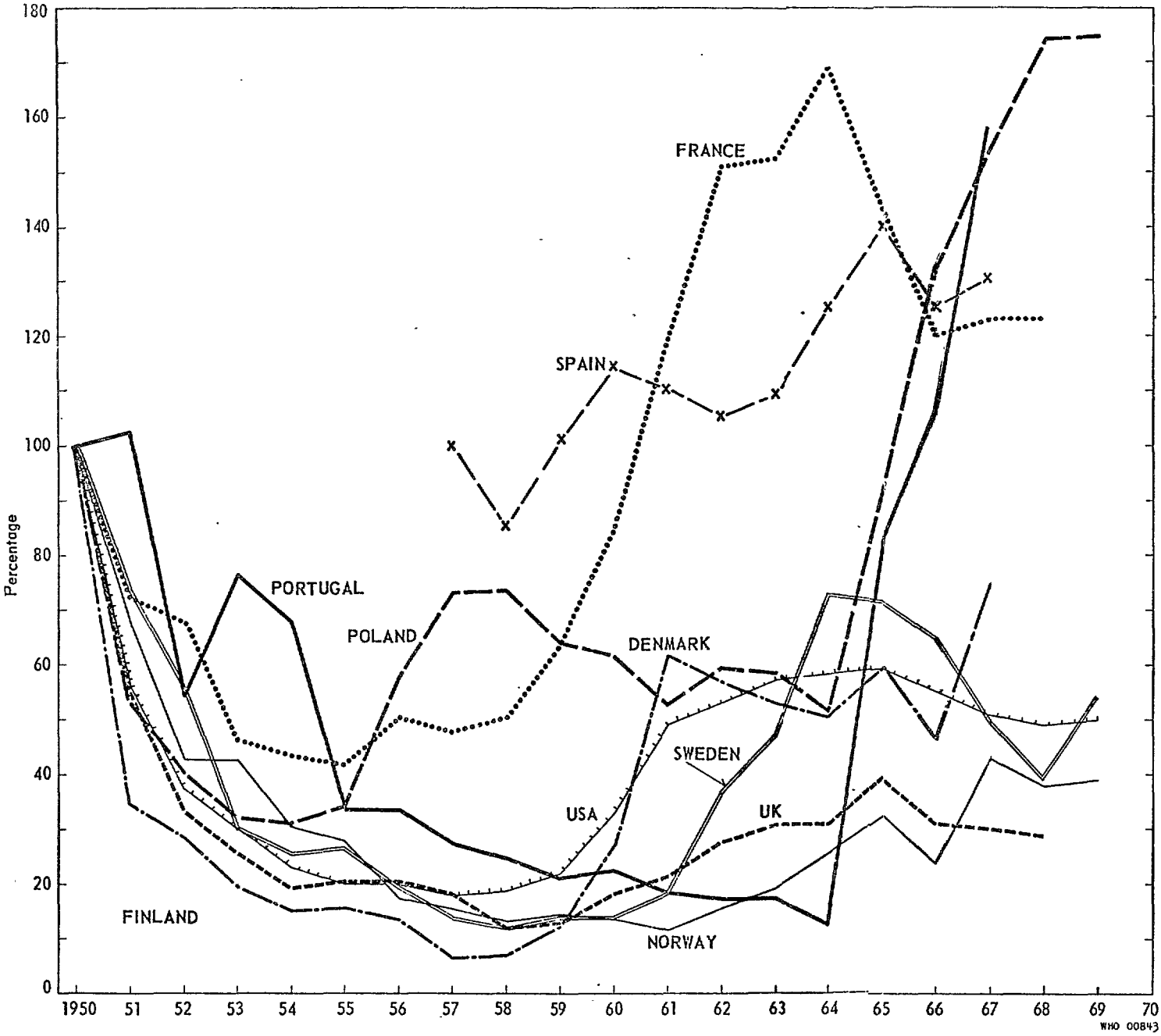


FIGURE 2

REPORTED PRIMARY/SECONDARY SYPHILIS 1960-1969.
YEARLY PERCENTAGE VARIATIONS IN INCIDENCE RATES USING 1960 AS REFERENCE (100%)

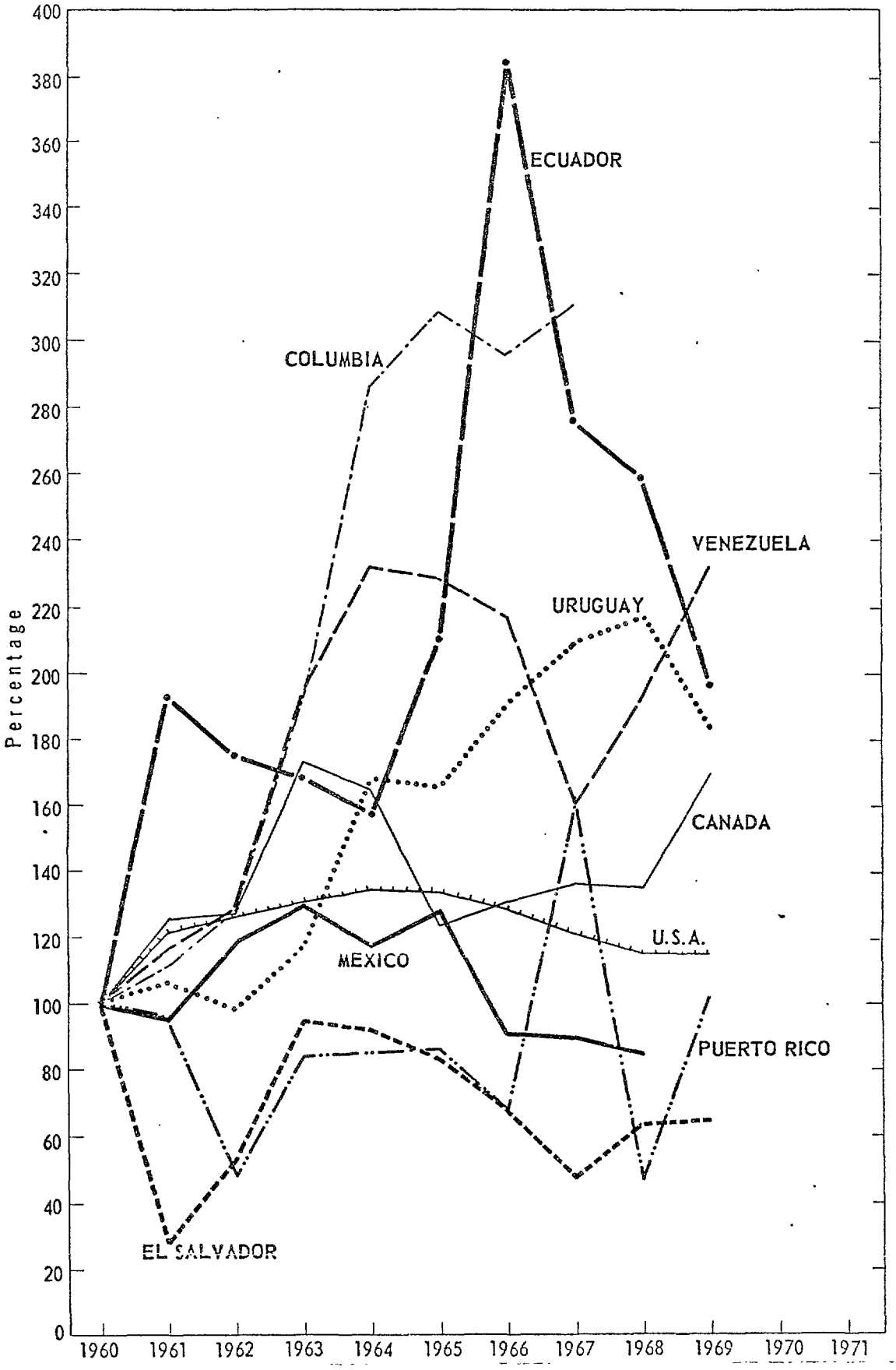


FIGURE 3

REPORTED GONORRHOEA 1950-1969, INCIDENCE RATES PER 100000 POPULATION

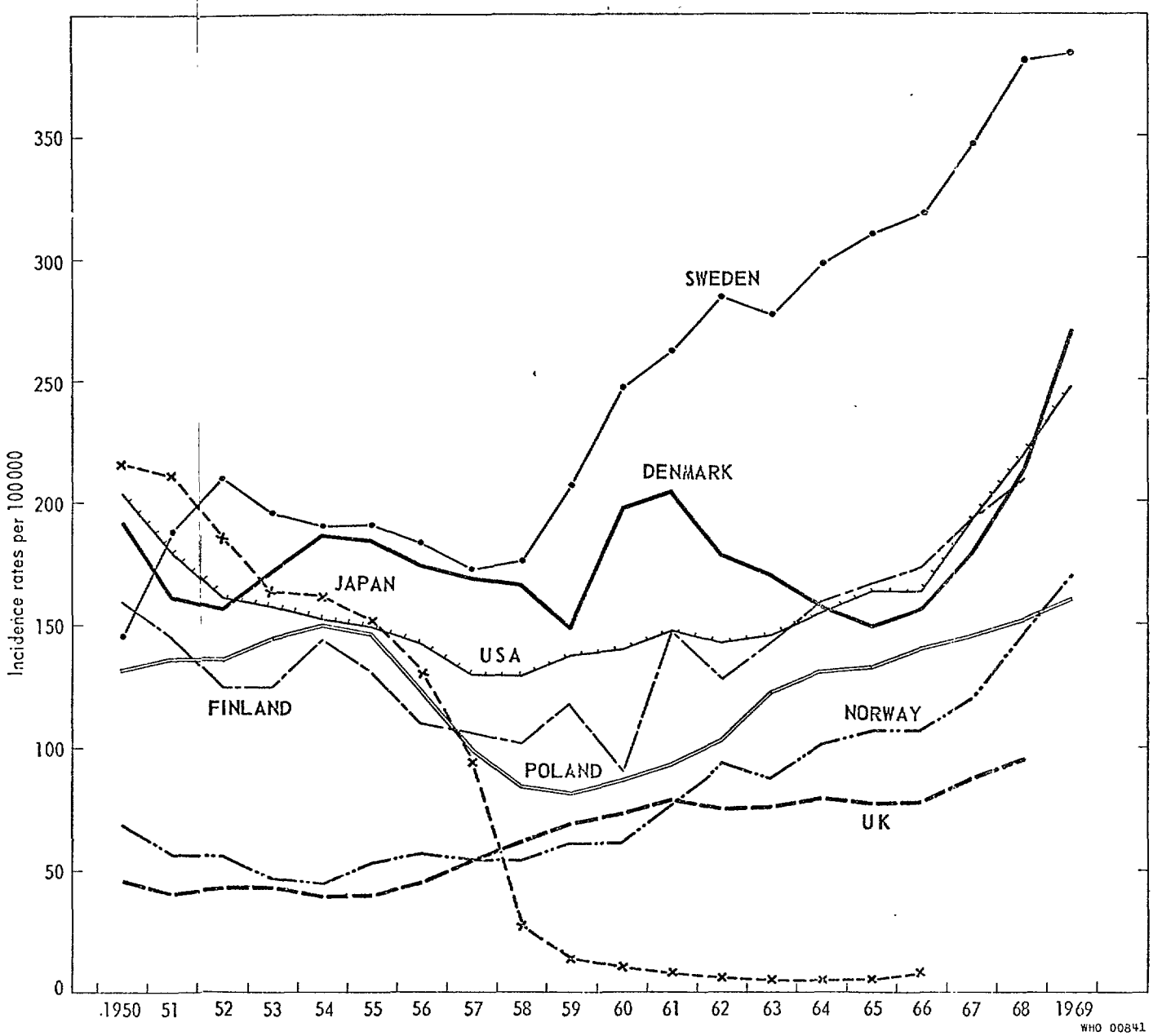
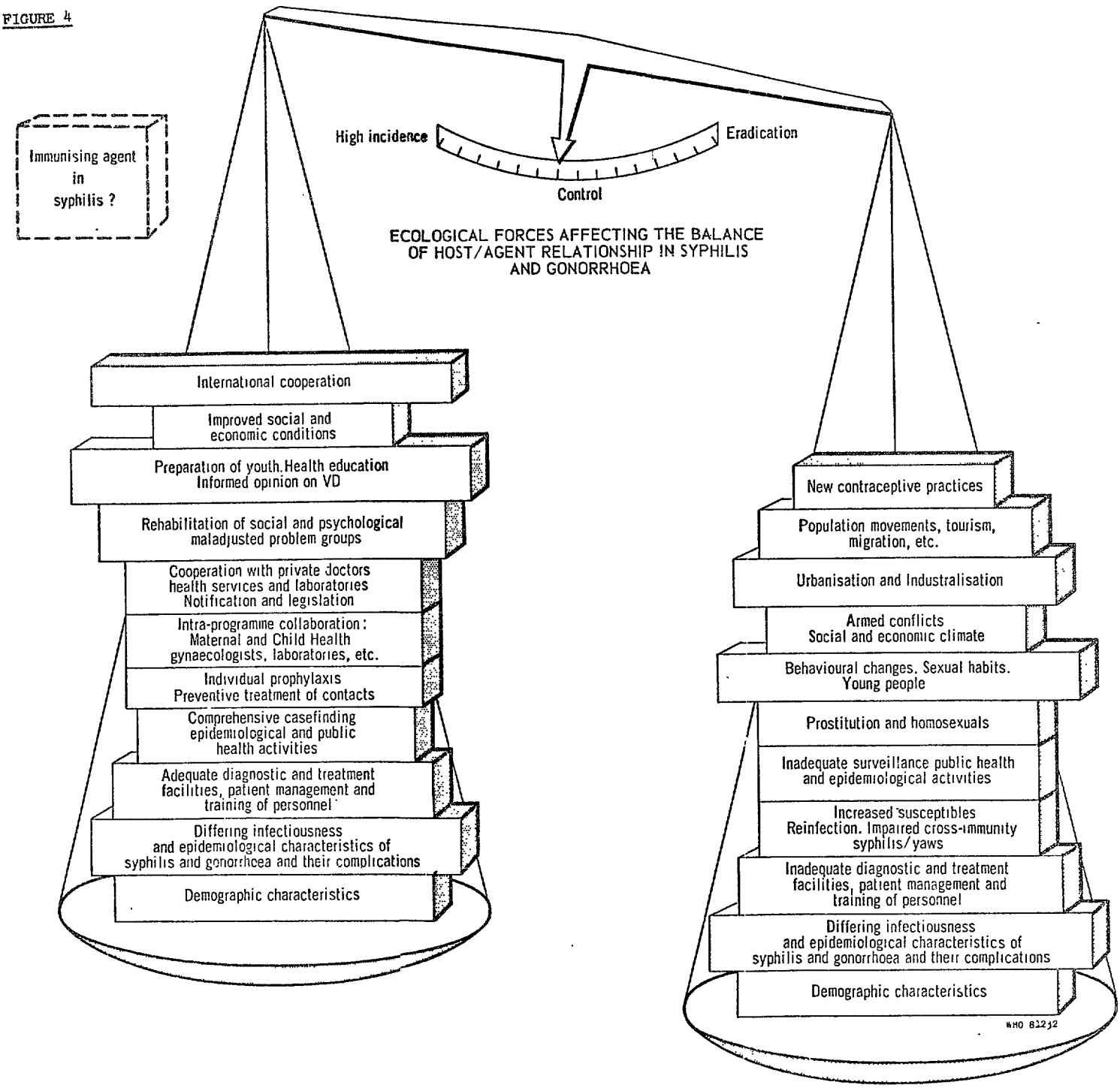


FIGURE 4



ECOLOGICAL FORCES AFFECTING THE BALANCE OF HOST/AGENT RELATIONSHIP IN SYPHILIS AND GONORRHOEA

Table 1

Casos notificados de blenorragia por 100,000 habitantes por paises, 1966 - 1969, América del Norte, Mesoamérica y América del Sur

País	1966	1967	1968	1969[a]
Canada	107.1	109.3	108.4	128.2
Colombia	200.4	243.3	218.3	148.6
Costa Rica	94.7	a) 150.9	153.1	201.7
El Salvador (b)	150.0	137.0	206.9	202.7
Estados Unidos	178.6	203.3	230.9	-
Guatemala	76.7	a) 80.8	a) 77.3	94.8
Jamaica	1956.1	2109.2	a)1937.8	1779.5
Nicaragua	126.9	54.4	a) 92.5	116.0
Panama	46.6	71.1	a) 15.8	32.7
Paraguay (b)	35.0	43.5	50.0	63.3
Peru (b)	92.4	82.5	a) 128.0	-
Republica Dominicana	-	-	a) 297.2	340.7
Trinidad y Tabago (c)	735.5	475.4	896.0	883.9
Venezuela (b)	397.5	429.1	466.4	-
Bermuda	302.0	456.0	472.0	490.4
Guayana Francesa	a) 262.2	a) 360.5	a) 490.0	666.7
Islas Bahama	8.6	62.7	35.0	58.4
Puerto Rico	108.2	94.9	94.0	104.5
Santa Lucia	774.8	444.8	193.5	405.4
Zona del Canal	119.6	135.7	144.6	89.3

(a) Datos provisionales o incompletos
(b) Area de notificacion
(c) Declaracion no obligatoria