Origin, social aspects and control of syphilis

Bruce V. Andersen
University of Nebraska Medical Center

Follow this and additional works at: http://digitalcommons.unmc.edu/mdtheses

Recommended Citation
Andersen, Bruce V., "Origin, social aspects and control of syphilis" (1934). MD Theses. Paper 303.
THE ORIGIN, SOCIAL ASPECTS AND CONTROL

of

SYphilis
College of Medicine
University of Nebraska

Presented to the members of the faculty, as a requisite for the degree of Doctor of Medicine.

Bruce V. Andersen

April 1934.
# Table of Contents

**Introduction**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
</tr>
</tbody>
</table>

**Syphilis**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>1</td>
</tr>
<tr>
<td>The Organism</td>
<td>3</td>
</tr>
<tr>
<td>Modes of Transmission</td>
<td>4</td>
</tr>
<tr>
<td>Forms of Contact</td>
<td>5</td>
</tr>
<tr>
<td>Clinical Features of Syphilis</td>
<td>7</td>
</tr>
<tr>
<td>Treatment</td>
<td>9</td>
</tr>
<tr>
<td>Prognosis</td>
<td>9</td>
</tr>
</tbody>
</table>

**History**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antiquity</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>19</td>
</tr>
</tbody>
</table>

**Social Aspects**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Considerations</th>
<th>Prevalence of Syphilis</th>
<th>Syphilis and Industry</th>
<th>Marriage of Syphilitics</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>35</td>
<td>44</td>
<td>54</td>
</tr>
</tbody>
</table>

**Control of Syphilis**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Education</th>
<th>Chemical Prophylaxis</th>
<th>Legislative Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>61</td>
<td>62</td>
<td>63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment Centers for Syphilics</th>
<th>Private Physician</th>
<th>Veneral Disease Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>66</td>
<td>73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
</tr>
<tr>
<td>Section</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>State Programs and Clinics</td>
</tr>
<tr>
<td>Epidemiology of Syphilis</td>
</tr>
<tr>
<td>Case I</td>
</tr>
<tr>
<td>Case II</td>
</tr>
<tr>
<td>Case III</td>
</tr>
<tr>
<td>Case IV</td>
</tr>
<tr>
<td>Case V</td>
</tr>
<tr>
<td>Summary</td>
</tr>
<tr>
<td>Bibliography</td>
</tr>
</tbody>
</table>
INTRODUCTION

This paper will deal with syphilis, but only briefly in the consideration if its clinical aspects, which are discussed merely as a resume of the cause, course and prognosis of the disease. This may be beneficial in the proof of the advantage of early recognition and institution of proper and adequate treatment.

The history of syphilis will be expressed both as to the antiquity of the disease and as to the origin, that is, whether it is a European or an American disease, and its mode of spread. A number of articles are reviewed expressing opinions of authors on both sides of the question of the origin, in an attempt to show where the largest amount of evidence is found.

The main part of this paper will deal with the relation of syphilis and society. The prevalence of syphilis as found in various surveys is reported. The importance to industry, due to lost time, labor and compensation, caused by syphilis in its many obscure and remote manifestation and the results of the care of syphilitics by the industrial physician is brought out in this article. The marriage of syphilitics is a question of
very great importance and one which is hard to solve. There are many problems to be answered before the syphilitic should be allowed to marry.

The control of syphilis is presented from a number of viewpoints, for instance: the prevention by education, chemical prophylaxis and legislative means; notification of the cases to the state and federal health departments; treatment centers are very important, of which we have the private physician, the pay clinic and the free clinic; the social service worker plays a large part in the control of the disease, by interviewing and finding sources and contacts.

A number of state programs which the various states try to follow in the combating of the disease of syphilis, have been presented. It was found that the several states had a somewhat similar plan except for a few variations and some considered syphilis as a major public health problem while other states did not.

In the last part of the paper the epidemiologists point of view for the control of the disease has been included. Five case reports of an epidemiologist's work in finding the sources and contacts and his methods of controlling these people, are presented as an illustration of the benefits which can be obtained by considering syphilis as a major communicable disease and a great hazard to the public, also the importance of finding obscure sources to prevent further dissemination is evident.
SYPHILIS

Characteristics.

The disease Syphilis in itself is a very interesting subject, (15) however this paper does not deal with the disease itself but its relationship to the health, wealth and happiness of the people infected with it and also the burden placed upon the non-infected people and the dangers they encounter and their part in the prevention of a further spread of the disease. A short discussion, however; of the main points of the disease will aid in pointing out the necessity for an energetic, well planned and well prepared program for the prevention and control of syphilis.

Definition.

Syphilis is an acute and chronic, infectious, constitutional disease due to the invasion of the body by the Spirocheta Pallida, which may attack any tissue or organ of the body, but which seems to have a preference for the skin and the arterial, nervous, and osseous systems; in the pregnant female, it may become "latent" and live in a symbiotic manner with the tissue cells of the body to become a potential menace to life and health years after the initial invasion.
Schaudinn and Hoffman in 1905, discovered the spirocheta pallida, which has been fully confirmed by the investigations of Metchnikoff, Neisser, Noguchi, and many others. At this time, with the finding of the specific causative factor, it was thought that the wide dissemination of the disease could be halted, but even with the known factor and known chemicals to combat the organism, the disease has increased in leaps and bounds, due not to the ineffectiveness of the Medical Sciences, but to the lack of cooperation of patient and health boards, both local, state and federal, and probably the largest factor is the lack of knowledge or outright ignorance and lack of desire to know the seriousness of the disease on the part of the endangered public.

Syphilis is a disease peculiar to man alone, not affecting the lower animals except in an experimental way. Because of this, the problem of demonstrating its causative organism has been more difficult than has been the case in some other infectious diseases. Investigations show that the disease may be produced in the higher apes and the testicles of rabbits furnish a most favorable host for the spirocheta pallida. Due to the fact that animals do not have or carry the disease, decreases the possibility of spread to a great degree. This limits the field of control to the human race, which prior to this time and even now, apparently seems to delight in exposing itself to the possibility of contacting the disease,
and with no knowledge, and in fact, evident disregard for the
great disability it produces, nor caring whether the disease
is passed on to the rest of mankind or not.

**The Organism.**

Fortunately the spirocheta pallida is a delicate organism
and is very susceptible to various influences. To this fact the
race may be grateful as, were the organism more resistant, obvi­
ously it would be more infectious and live longer on media
contaminated by syphilitics. To this delicacy of the organism
may be attributed the comparatively small percentage of extra­
genital chancres and innocently acquired incidents of syphilis.

When the organism is kept at room temperature under
ordinary conditions it soon becomes sluggish and an absolute
cessation of motility occurs within twenty-four hours. Secre­
tions from syphilitic sores when thoroughly dried, are probably
no longer infectious, but it is far better to treat such material
as infectious.

The organism is quickly destroyed by antiseptics and degrees
of heat and cold and it quickly undergoes resolution with strong
solutions of soap, which latter observation is of value in re­
lation to the prevention of transmission of the disease after
a suspected contamination.
Modes of Transmission.

Syphilis is the most prevalent of all diseases, especially of the chronic constitutional diseases, as it is the basis of a large percentage of them. It is highly probable that ten or fifteen per cent of the inhabitants of all civilized countries are infected with syphilis.

Prostitution and promiscuous intercourse are responsible for the transmission of the disease in the largest majority of cases. One can safely say that all prostitutes have syphilis; it is rarely that one escapes for longer than a few months. The clandestine prostitute is probably the most prolific factor in the syphilization of a community, as she goes about it in such a way that there are not the facilities for soap and water and other means of immediate prevention that are obtained in this respect among the professional prostitute.

Syphilis may be innocently acquired and undoubtedly this occurs in thousands of instances, but it is clinically infrequent and compose a very small percentage of the incidence of the disease. Extra genital chancre are not always innocently acquired chancre. The majority of these occur in male and female prostitutes, and in those regions which are subjected to exposure in the course of libido.
Forms of Contact.

There are two forms of contact by which syphilis may be conveyed from one individual to another, namely, direct and indirect contact.

Direct contact is when an abrasion in one who is not infected comes into immediate contact with the lesions of one infected. This may occur through sexual intercourse, through professional manipulations by physicians, nurses, midwives and in wet nurses.

Indirect contact is meant the inoculation through an abrasion in one free from syphilis by the use of some object which had been used by a syphilitic and has had deposited upon it the virus from an infectious lesion. This may occur in many ways, surgical instruments, pencils in schools, public drinking cups, etc.

The most infectious lesions of syphilis are those which occur in the early invasive stages of the disease. The earlier superficial lesions are infective only when covered by the epidermis or a protective crust. Those unprotected, such as mucous patches about the genital organs of either sex, the mouth, lips or throat, and the condylomata about the breast, anal region, vagina, or about the mouths of congenital syphilitic children, are exceedingly infectious.
The early and late lesions of the skin harbor infectious living organisms but the lesions are practically non-infectious as the organisms are prevented from coming alive to the surface by pathological exudates and formations, in the form of crusts, or by the intact epidermis as in the early papule.

The late gummatous lesions contain less spirochetes than the early lesions of the disease, and they are potentially just as infectious as those in the earliest lesion, but are practically non-infectious as they occur sparsely, are situated deeper in the skin, and are therefore less accessible than the organisms in the early lesions. The blood of syphilitics, even in the early stages, is practically non-infectious though it may contain live organisms. The organisms are sparsely distributed in the blood stream and are not as infectious from this source as from the epithelial habitats where they occur in far greater proportions. The saliva of the early syphilitic and the congenital syphilitic is very dangerous, as the buccal cavity may contain virulent lesions.

The spirocheta pallida has been recovered from the breast milk of syphilitic women, which is of possible practical importance when a wet nurse is to be selected to suckle an infant.
Clinical Features of Syphilis.

The primary lesion is the chancre, which in some cases may be unnoticed and thus the disease may go unsuspected. With the chancre is the involvement of the blood stream.

Some time after the chancre there is the formation of the various skin eruptions. First, the roseola, caused by the presence of the spirochetae in the cutaneous tissue. Then we have the formation of the macule, papule and pustules. None or all of these may be present, as there is a great variation.

In the "tertiary" stage, we have the formation of the gumpa, which may occur in any region or tissue of the body.

There is nothing more important to establish in the discussion of syphilis than the fact that the spirocheta pallida in every invasion is disseminated into the tissues of the cerebrospinal system, the organisms being scattered throughout these tissues as in all others, therefore visiting the meninges, vessels, and parenchyma of this system. The visit may be transient, the organisms soon dying out, or they may remain to cause trouble a few months or many years afterward.
Ostealgia of the long bones, the tibia particularly, and the bones of the skull, especially in women, may be an early symptom of involvement of the bones by the virus. Periostitis may occur by the localization of the virus upon the clavicle or long bones sufficient to cause swelling or nodes. Dactylitis and other forms of bone involvement, such as exostoses of the tibia and the cranial bones. Gummata of the bones are found in severe cases, and is often accompanied by destruction of tissue, especially in the nasal bones. Syphilitic arthritis is frequent usually of the knee joint in the acute and sub-acute form. This will give rise to a charcot joint, which is a large, painless, freely moveable joint.

The thyroid gland and spleen may be involved and enlarged, also accompanied by severe blood changes. May have involvement of the liver in early cases, accompanied by jaundice, hepatitis and perihepatitis and cirrhosis of the liver are quite common. The kidneys are more or less susceptible and the majority of cases show albuminuria, also gummata and amyloid degenerative changes may occur as elsewhere.

The eye commonly undergoes changes, as neuroretinitis, choroiditis, keratitis and oculomotor changes forming the Argyl-Robertson pupil.
Of the arterial system changes which are found are aneurysms and arteriosclerosis.

Syphilis may assimilate any disease, some of the diseases or conditions produced by the late effects of syphilis are Tabes Dorsalis, paresis, and many other mental condition, charcot joints, gastric crises, neural-gic shooting pains, various eye disturbances, secretory and excretory disturbances, muscle paralysis, nervous and mental diseases, and many others too numerous to mention.

Treatment.

The drugs used in the treatment of syphilis are: mercury, arsenic and bismuth in their various forms and preparations. The use of the drugs is varied at times and including the rest periods, the treatment should be extended over a two or three-year period with serological tests of the blood and spinal fluid.

Prognosis.

If treatment is instituted early in the disease, a clinical cure or a definite retardation of the course is obtained. However, it may reappear at a later date in some cases. Treatment started in a late case will only stop the progress and a cure will not be obtained, as the pathology all ready existent can not be undone. All cases can be made non-infectious and the late serious, disastrous complications can be prevented with adequate treatment.
HISTORY

Antiquity.

There has been a large amount of work done on the history of syphilis. There has been a great deal of time and money expended in the investigation and of finding new evidence, such as, documents, skeletal remains and examination of mummified parts, in an effort to prove the presence of the disease in certain localities. Most of the controversy has been on the subject, "Is Syphilis of American Origin or Is It of European Origin".

Rosenkrans in his discussion as to the origin of syphilis (51) resorts mainly to verbal proof taken from the Bible, Greek mythology and other sources. His proof is more or less theoretical and no actual basis or absolute proof. Rosenkrans gives the Century Dictionary as proof for the origin of the word Syphilis - "Syphilis is a word introduced into technical use from the name of a Latin poem by Heironymus Fracastor, an Italian physician and poet who lived at Padua from 1433 to 1553, and published this poem in 1530, entitled, 'Syphilis Sini Morbi Gallici libri tres' and named Syphilus, a character in the poem".
In this article Rosenkrans has numerous quotations from the Bible, by which he attempts to prove that the disease was known at that time. Some of these quotations are: Psalms XXXVIII -
"Here is no soundness of my flesh because of thine anger, neither is there any rest in my bones because of my sin. For my loins are filled with a loathesome disease and there is no soundness in my flesh. My lovers and friends stand aloof from my sores and my kinsmen stand afar off". Another is: Exodus XX -
"Visiting the iniquities of the fathers upon the children into the third and fourth generation".

Rosenkrans believed that physicians who lived more than 900 years ago, and physicians even before them, made mention of the cure of syphilis by means of mercury. He also agrees with Becket who has the opinion that under the widely comprehensive notion of leprosy were included other forms of skin diseases, owing their existence to some previous affection of the genital organs. The above statement could not, or rather should not be taken as proof that they were dealing with syphilis as there were and are many other diseases which could be confused, and with the lack of positive evidence of syphilis, should be held in doubt as to the presence of syphilis at that time.
Rosenkrans also studied some of the Greek mythology, especially the story of Priapus. From this story he concluded that the Greeks did not know much about the venereal diseases, and shame and fear is the meaning of their word "Pudenda". However, the above is interesting in the fact that the meaning can be said to indicate the presence of syphilis, however it would be difficult to prove to the satisfaction of many investigators and authorities on the history of the disease.

The poem written by Fracastor is a much referred to piece of work. The eloquence of the language, the melody of the rhythm and the exquisite beauty of the digression stamped the poem a masterpiece.

J. L. Miller in his paper on the history of Syphilis, (32) gives part of the poem as translated by Tate. It shows an interesting mixture of fact and fancy giving however a fairly accurate summary of the knowledge of syphilis of that period.

In the poem the appearance of syphilis in Europe is traced to the siege of Naples.

"To Naples first it came
From France and justly took from France its name".

Fracastor describes how a shepherd, Syphilus, whose herds were dying on account of drought, cursed the sun god who in turn
visited upon him this disease.

"A shepherd once (distrust not ancient fame)
Possessed these downs and Syphilus was his name.
A thousand heifers in these vales he fed
A thousand ewes to those fair rivers led.
From him the malady received its name".

Fracastor believed that syphilis was brought to Europe from America, although suggesting its earlier presence in Europe.

"Yet where the western ocean finds its bound
(The world so lately by the Spaniards found)
Beneath this pest the wretched natives groan
In every nation there and always known".

He refers to mercury as a remedy - a huntsman, friendly to the gods contracted the disease. He prayed the gods to give him relief and was told to offer a sacrifice of a black ram at the mouth of a certain cavern and on the day following to return to the cave when he would be cured. On his return, he was met by a nymph who guided him to a stream of quicksilver.

"But here turn off and take the right hand way
This path does to that sacred stream convey,
In which thy only hope remains, she said
And under the golden roofs the patient led.
Hard by, the lakes of liquid silver flowed,
"Thrice wash in these" said she, "thy pain shall end",
And all the stench into the stream descend
Thrice with her virgin hands the goddess threw
On all his suffering limbs the healing dew.
He at the falling filth admiring stood,
And scarce believed for joy the virtue of the flood".
Fracastor tells how to prepare and use a mercurial ointment,

"And for vehicle use lard of swine".

After going into detail on the method of preparing it, he gives directions as to how it should be applied,

"With these ingredients mixed you must not fear Your suffering limbs and body to besmear".

As it is claimed syphilis appeared during the seige of Naples. According to Pusey, the army of Charles VII of France (41) invaded Italy to make good his claims to the throne of Naples. Italy, weakened by luxury and the rivalries of her numerous states, was able to make no effective resistance, and the progress through the peninsula of Charles' army, composed of mercenaries from all parts of Western Europe, was more a triumphal march of debauchery than a serious military campaign. Charles captured Naples in February of 1495, and prepared for its permanent occupation. Due to the plague and dissipation of the troops, which compelled the evacuation of the city, and in the spring of 1495 the army was in undisciplined retreat from Italy. The disorganized troops began to gradually disband and scatter all over Europe. Many of the infected soldiers probably returned to their own countries and homes, thereby furnishing a few focus for the dissemination of the disease.
At the time of the entrance of the army of Charles into Italy, Rome was the theater of activity for a large number of Spanish prostitutes. It was estimated at this time that there were over 15,000 ladies of leisure in the city. This furnished sufficient field for the dissipation and infection for the soldiers in the army. Also a large number of men in the army were Spaniards, who could have been infected in their own country before joining the army.

Some time after the entrance of Charles' army into Naples, the soldiers contracted this so-called terrible malady, which they did not know the cause of, but believed they obtained the disease from the people of Naples. Thus the French called it the Neapolitan disease. At this same time the disease spread throughout the people of Italy, probably by the aid of the soldiers, so the Neapolitans called it the French disease.

The spread of the disease from Italy can be traced, step by step, with the dispersal of Charles' army, by the local chronicles of the time. It appeared in France and Germany and Switzerland early in 1495, in Holland and Greece in 1496. It spread to England and Scotland in 1497, and to Hungary and Russia in 1499.
Miller in his article gives abundant evidence that syphilis appeared in epidemic form at this time in Europe. Astruc said, "The disease made its appearance at the time of the siege of Naples, as may be learned from the joint testimonies of all the physical writers who flourished then in Italy". Caspare Torella in the year 1520 in discussing syphilis says, "The learned avoided having to do with this disease, frankly confessing they knew nothing about it. In our days there is nobody who has ever seen such a monstrous complaint". Sabellicus, a famous Italian historian who died of syphilis in 1500, noted its rapid spread from Italy to Germany, Slavania, Macedonia and Greece. Marcellus Cuminum of Venice, Surgeon to the troops at the siege of Naples speaks of the presence of syphilis, "In Italy in the year 1495, owing to celestial influences, a disease appeared among the soldiers, characterized by a small pustule on or under the prepuce about the size of a millet seed and later the patient developed aching of the extremities and pustules may appear over the entire body".

Miller tells of a decree issued by the Parliament of Paris in 1497, of which Astruc gives a copy. It decreed that all persons infected with the "Great Pox" should leave the city within twenty-four hours. A later decree gave provisions for the care of townsmen and city employees. Pusey states that in 1496 and 1497 prophylactic measures were tried against it in
Nurnberg. In April of 1497 the town council of Aberdeen, Scotland, ordered that, for protection from the disease of France, all prostitutes desist from their vice and work for their support or else be branded on the cheek, and banished from town.

A Japanese physician by the name of Okamura investigated the literature of Japan and could find no earlier record of the disease than 1504, and this was following the appearance of a Portuguese ship.

Susuki of China, made researches along this field and concluded that the first definite evidence was only after contact with Europe.

The above discussion is a fairly accurate although brief historic record of the startling spread of syphilis over the known world in a few years after 1494. There was no name for this disease and a new one had to be invented.

Syphilis was at once recognized as a new disease. It was a disease usually of venereal origin, which, unlike other genital diseases, regularly had generalized cutaneous and systemic manifestations. Pusey believes that the ancients were familiar with local genital diseases. It is a very striking fact that in all medieval and ancient literature, there is no certain
reference to a disease of the genitals which is commonly followed by general manifestations. This peculiarity of the disease was recognized at the time as evidence of a new disease. No description of the syphilitic syndrome has been found prior to 1493.

Another evidence of its newness was its severity. The disease compelled attention by the severity of its manifestations. It amounts almost to an axiom in pathology that when an infectious disease first appears among a people, finds lodgement in a virgin soil, it rages with unwonted severity. This has been noted many times, with measles, scarlet fever, smallpox, and with syphilis in modern epidemics among isolated peoples. In contrast with the trivial character of the early manifestation of syphilis as ordinarily seen in peoples among whom it has long been present, all evidence points to its severe character during this first epidemic. The cases ran an acute febrile course accompanied by symptoms of such severity as are now seen only in very unusual cases. There were high fever, intense headache and bone and joint pains; early skin symptoms so severe that they simulated smallpox: great prostration, and very frequently a fatal ending early in the disease, a result that is the rarest occurrence at present. The epidemic had all the characteristics
of a virulent plague. With the loose morals of the time, however, syphilization of the world was rapid, and contemporaneous evidence, Fracastor for example, indicates that the severity of the symptoms of early syphilis rapidly diminished and within fifty years the disease assumed the character with which the world has since been familiar.

Origin.

In the above discussion we have attempted to describe the epidemic of syphilis starting at about the year 1495. The question which next presents itself is, "Where did the disease originate? Was it a European disease that suddenly became virulent, or was it introduced from without Europe".

In answering the above question, I believe that the disease did not exist in Europe before this time. The literature and other circumstantial evidence of syphilis in Europe, has been subjected to very severe scrutiny in order to find evidence of syphilis before 1495 in Europe. If syphilis existed in ancient times, unquestionable evidence of it certainly should have been found in the literature of the Greeks, Romans, and Arabians, who would have had no lack of ability or inclination to describe it as accurately as any of us today.
Cumston made an extensive examination of ancient literature (10) for descriptions of syphilis. He is noncommittal in his conclusions but he found no description which offers presumptive evidence so strong that would compel one to say that it was likely syphilis existed in the Eastern hemisphere before the return of Columbus.

Karl Sudhoff, at the International Congress of Medicine (46) in London in 1913 reported the results of his examinations of German records antedating Columbus' discovery of America, and concluded that in references and enactments regarding "gros mal" he had found evidence of the existence in Europe of syphilis a very few years before Columbus' return.

Hans Haustein in the light of these findings, made an (47) exhaustive, critical examination of the documents and concluded that Sudhoff's references were to epilepsy and not to syphilis.

At a later date Sudhoff in corroboration with Singer (32) reviewed the literature and found no evidence of the disease prior to 1495. Bloch also is reviewed in the same reference and he concludes that the few reported appearances of the disease were due to printer's or translator's errors. Astruc also did work in this same field but could find no information sufficiently detailed to carry conviction of the earlier presence of syphilis in Europe.
Butler and Biello believed that Bloch was too great at argumentation and discrediting other findings to prove the American origin of syphilis. It was pointed out that even if Pre-Columbian American Syphilis was proven, it would not affect the certainty of Pre-Columbian European syphilis. It is suggested in this paper that the determination of aneurysm of the aorta in Egyptian mummies might serve to answer our question. But as far as I could find there has been no reports along this line of thought.

In the preceding paragraphs I have tried to give a survey of the work done in an attempt to prove and disprove the existence of syphilis in Europe before the great epidemic of 1495. Now we come to the presentation of material attempting to show the presence of syphilis in America before the epidemic of 1495 and to endeavor to show that Columbus and his crew, possibly could have been the ones responsible for the epidemic.

There is astonishing, authentic historical evidence of the American origin of syphilis which was brought to light the labors of Montejo Robledo, a Spanish army surgeon who reported his findings in 1882. The importance of this work was first emphasized by Bloch in 1901 and by Pusey in 1915 and lately Williams and Lacago translated many of the passages. To this I shall refer
to present proof of the American origin.

(14, 27)

Montejo had access to the great accumulation of documents in the Spanish archives. He gives extracts from numerous Spanish historians and scientists who were either contemporary with Columbus, or took part in the first Spanish exploitation of the Americas.

Oviedo who lived from 1478 to 1557, is quoted considerably in the writings. Oviedo was in Barcelona at the time of the return of Columbus in 1493, and knew him and the members of his crew. In his Historia general y natural de las Indias, and in a report drawn up at the command of Charles V of Spain, he recited that the disease was contracted from Indian women by the Spaniards with Columbus, that it was brought by them to Spain and thus transmitted to the army of Charles VIII by Spanish soldiers, and that syphilis should be called the Indies disease, rather than the French or Neapolitan. He also mentions that Pincon, the Commander of the Pinta had contracted syphilis, and that "it is common among the Indians, but in those regions is not so dangerous as with us".

The father of Las Casas accompanied Columbus on his second voyage, and Las Casas (1474-1566) himself was in Haiti in 1493, where he lived many years. He records: "There were, and still
are, two things which at the beginning were very dangerous to
the Spaniards. One is the disease syphilis, which in Italy
is known as the French malady. The other was chiggers. Las
Casas asked the Indians if the disease was ancient on the
island and they all answered, yes, and that the Indian, men
or women, that had it were little affected by it, almost as
little as if they only had smallpox.

In addition to Oviedo and Las Casas, numerous others of
the early chronicles of Spanish America testify as shown by
the researches of Montejo, to the pre-Columbian existence of
syphilis in America. Sahgan (1499-1590) who went to Mexico
in 1529, in his History of New Spain describes syphilis among
the Aztecs of Mexico, and Francisco Hernandez (1514-78) also
describes syphilis in Mexico.

The testimony of Oviedo and Las Casas and the others is
commonplace compared to the startling evidence which Montejo
unearthed in the works of Diaz de Isla, a physician of note,
a surgeon for ten years at the Hospital of All Saints in Lisbon.
He had a large experience in syphilis which he incorporated in
a work prepared between 1510 and 1520. Montejo found not only
the first edition of 1539 of Diaz' work, and the second edition
1542, but also the original manuscript which is preserved in the National Library of Madrid. The manuscript contains some significant paragraphs which have been omitted from the printed work. The manuscript was dedicated to King Emanuel of Portugal, who died in 1521, and Williams calls attention to this as evidence that it was written before that date.

The contents of his work are as follows: Syphilis was unknown before the year 1493. It was brought by the crew of Columbus on their return from the first voyage to Espanola (Haiti). Diaz called it the disease of the Isle of Espanola, but also gave a number of native names for the disease. A majority of Columbus' crew returned to Spain infected with syphilis, and Diaz himself treated several syphilitic sailors from this squadron, among them the pilot, Pincon of Palos.

When one stops to consider the amount of positive evidence for the American origin of syphilis one is lead to believe that the European origin is greatly overbalanced.

Now let us consider another means of investigating the early evidence of syphilis, both from the European countries and from America. This is by the examination of bones as syphilis is one of the diseases which leaves evidence in bones that is at times so characteristic that it must be accepted.
The great difficulty is attaching the age to the bone and being able to prove its antiquity.

Collections of pre-Columbian European bones have been studied again and again with this object in view, and yet so great an authority as Virchow, one of the world's greatest anthropologists and perhaps its greatest pathologist, said in 1896 that no authentic syphilitic bones of pre-Columbian date have been found in Europe.

G. Elliot Smith, one of the ablest paleopathologists, has recently given very striking evidence upon this point as the result of the examination of 30,000 bodies of ancient Egyptians and Nubians representing every period of the history of the last sixty centuries, and from every part of the country. He stated quite confidently that no trace whatever even suggesting syphilitic injuries to bones or teeth was revealed in Egypt before modern times.

H. U. Williams did a very thorough and inclusive piece of work on the Origin and Antiquity of Syphilis from Diseased Bone. He gives a good description of the pathological descriptions of the syphilitic bones and also has a collection and discussion on all positive and doubtful bones.
The first bones discussed were those found in Japan. They were studied and described by Adachi, who stated that they belonged to the stone age, that is, more than twenty-five hundred years ago, that showed changes which were pronounced by Yamagiwo to be those of syphilis.

The Egyptian bones reported are the ones studied and said to be twenty-eight centuries old and said to be syphilitic by Dr. Zambaco. However, Fournier did not agree. Then the Roda skull from a prehistoric cemetery which Williams does not believe to be syphilitic. The Nubian bones were studied by Michaelis and dated around 1000 B.C., these might be syphilitic according to Williams.

The bones from France, the first the tibia from Solutre, which is probably syphilitic, and has no definite date, but thought to be prehistoric. The long bones of de Boye from the Valley of the Marne, these bones date back to the Neolithic period and Raymond thought they were syphilitic.

The American evidence is more strongly positive and they are able to attach more definite dates which aids greatly in proving the origins and antiquity.
Kidder excavated a ruined pueblo in Pecos, New Mexico and passed through a number of superimposed strata, with which he was able to associate various types of pottery. The lowest stratum belonging to the earliest occupation, was dated as from 800 to 1000 years ago. An enormous amount of skeletal material was obtained.

It was described by Hoston as being syphilitic and also believed it to be prehistoric and pre-Columbian. Williams also examined the bones and agreed that they were syphilitic.

Dr. Julio C. Tello working in Paracas, Peru disclosed the presence of curious bottle-shaped tombs, buried below the sand and excavated in a hard clay or shale. These tombs contained numerous mummified bodies wrapped in beautiful embroidered cloth. The older bodies of the tombs had been removed and buried alongside the tomb and the specimens were taken from this group. The character of the pottery, implements and ceremonial objects led Tello to conclude that the burials antedated the well-known Nasca period. Others regarded them as indicating a variety of early Nasca culture. In any case they were much earlier than the Inca period, which dated about 1200 A. D. These bones were syphilitic as described by Williams.
Mound builders of Ohio left four lots of bones which were pronounced prehistoric by Shetrane and the changes in the bones are consistent with syphilis.

Williams comes to the conclusion that the amount of material in the North and South Americas is proven syphilitic and is of the pre-Columbian time and proves that the American Indian had syphilis before the arrival of the white man.

The material found in the Eastern Hemisphere is all doubtful and it is stated that it is probably syphilitic and the material which appears syphilitic has no proof of its antiquity.
SOCIAL ASPECTS

General Considerations.

Among the diseases with which the science of public health and preventive medicine has to deal, syphilis as well as the other venereal diseases occupy a unique position. All the other infectious diseases are spread through legitimate or respectable contacts of civilized life. There is a common belief that syphilis is a property of the underworld and consequently the hesitancy of the general public to think about it and discuss it as other problems are discussed. Every year thousands of syphilitics marry, some of whom are fit, but most of whom are not. Industry is burdened by having in its employ many thousands who are liabilities instead of assets. The states, cities and federal government spend thousands of dollars yearly in their battle to control the spread of syphilis and in the maintenance of those incapacitated by the disease. Yet the public complacently lives on indifferent of the existence of such a condition.

However Walter Clarke believes that there is a gradual but fundamental change, taking place in the view which health authorities, the medical profession, and the general public
have of the various problems surrounding syphilis. We are passing through a period of evolution not dissimilar to that which occurred in the campaign against tuberculosis. There was a time when tuberculosis was regarded as a disgrace and the unfortunate victim of this disease was ashamed of his affliction. "Consumption", somehow stamped a stigma upon its victim. The social background of the disease was little understood and the public thought that people suffering from consumption were somehow blameworthy. Our reactions toward syphilis have been even more pronounced because not only is the acquirement of this disease a great human tragedy but the method of contracting it is frequently associated with conduct which is surrounded by inhibitions, prejudices, and often with social stigma. The fact that syphilis is often associated with prostitution or other forms of promiscuity, led to a feeling on the part of the public that the acquirement of this disease constituted just wages for sin. Many of the laws and much of the public health policy in the past have over emphasized the association of syphilis with prostitution.

It is only in recent years, since it became clear that a very large part of syphilis is acquired in socially sanctioned family contacts or through accident, that the emphasis on
prostitution as a factor has somewhat diminished. The fact that all cases of congenital syphilis, at least half the cases of syphilis in married women and many cases of extragenital infections are or should be devoid of social stigma, makes it clear that we have erred in the past in believing that the solution of the problems of syphilis lay exclusively in the control of prostitution. Furthermore, a large proportion of those who acquire syphilis as a result of promiscuity do so in the ignorance and exuberance of youth. In such cases it is the conduct and not the disease itself which is the proper object in social condemnation.

However, on the other hand one may argue that if it were not for the act of prostitution it would eliminate a large number of infections in men who later marry and infect their wives who unknowingly give birth to children who later show the signs of syphilis. Thus it can be shown that the syphilitic prostitute is the basis or focal point for the spread and source of a good many infections, as right there the prostitute is the cause, however not direct, of three cases of syphilis, namely, husband, wife and child.
It is now believed by the leaders in the field of public health and of medicine that we are on sound scientific ground in viewing syphilis as a highly prevalent, communicable disease affecting the righteous as well as the wicked, the rich as well as the poor, the wise as well as the stupid, and all races and conditions of men, women and children. We will make progress most rapidly by dealing with syphilis in accordance with the well-established principles of control of communicable disease and in making as few exceptions as possible in favor or against syphilis. If, when confronted with a problem in the control of syphilis we consider what we would do in a similar case, involving tuberculosis, we will usually be on a sound policy basis. For both are familiar diseases, both are chronic with long periods of infectivity, both have a complex social background which must be taken into consideration. Syphilis, however, unlike tuberculosis is quickly controllable, curable in its early stages and can in all but its final periods be treated inexpensively as an ambulatory disease. The advantages are therefore very greatly on the side of syphilis as compared with tuberculosis, and no less impressive a body than the New York State Health Commissioner stated that its conquest is within our power.
Syphilis in women is milder than in males, more amenable to treatment, less liable to late nervous and vascular sequelae. On the other hand there are far more unrecognized cases in women than in men. This is the cause of so many syphilitic children. With the modern methods there is no longer any necessity for any woman to have a syphilitic child provided she is treated adequately as soon as diagnosed, and has a full course of further treatment during each succeeding pregnancy.

Prevalence of Syphilis.

It is extremely difficult to get an exact report on the number of syphilitics in the United States or even a percentage of the cases. There are many cases who never come to a doctor and go on undiagnosed and untreated. How many of such cases are not known. Also there are a large number of cases that go to private physicians who request that their case not be reported. Thus this creates a large discrepancy in the statistics. When in reviewing the statistics of the prevalence of a disease as syphilis, one must think of the numbers receiving treatment by the druggists, quacks and charlatans. Thus we should realize that the figures quoted will be an underestimate of the actual number of cases present.
Earle G. Brown in reporting on a questionnaire which was sent to the private physicians of twenty-two counties in Kansas, requesting a report on the number of cases of syphilis and gonorrhea actually under treatment or observation on a selected day, June 1, 1927, there were returns received from seven hundred forty-two private physicians. Three hundred fourteen of these doctors reported cases, four hundred twenty-eight reported no cases and seventy-five stated they did not treat cases of syphilis or gonorrhea.

The number of cases reported totalled three thousand one hundred thirty-five giving a ratio of 5.29 per thousand population. Of this number one thousand eight hundred sixty were gonorrhea and one thousand two hundred seventy-five were syphilis. A ratio of 3.14 per thousand for gonorrhea and 2.15 per thousand people for syphilis.

In this same questionnaire the doctors were asked if they thought the prevalence of venereal diseases were increasing or decreasing. Forty-four of the doctors did not think there was a change, fifty believed the incidence was increasing, one hundred thirteen thought it was decreasing. They also thought the decrease was due to the public health education and prophylaxis.
Parran and Usilton did some work and compiled figures (37) on the extent of venereal disease in the United States.

It was estimated that there are 643,000 cases of syphilis constantly under medical care in the United States. The case ratio on which their estimates are based are for syphilis 4.77 for males, and 3.08 for females per thousand population.

The results of the total prevalence surveys indicate that approximately 31% of the total cases under treatment are found among presumably indigent persons, inasmuch as this percentage of total cases were being treated at public expense in clinics, hospitals or other institutions. The peak age group for the onset has been determined as twenty and twenty-five years of age. This is at the time when most people commence their active work period and also become married, and become socially more active, thus the probable explanation for the largest number of infections during this period.

Also according to reports of Parran and Usilton there is a greater prevalence of venereal disease among the negroes than among the white population. The rate per thousand being eight for whites and eleven for the negro population.
The results of a number of published reports over a ten-year period indicates that of women admitted to maternity hospitals, 6.9% had a positive Wasserman reaction. This shows the great possibility for increasing the prevalence of syphilis by these mothers giving birth to congenitally syphilitic children.

When one thinks in the terms of the proportionate number of cases of syphilis to the various other cases of reported infectious disease, it ranks quite highly. The United States Public Health service reports that it ranks second if not first to all others, and this is also without a complete report as all states do not report syphilis.

Gill in 1932 made a survey of the presence of syphilis in the South. The survey was made possible by the assistance of the Macon County Board of Health. The method of procedure was to establish field clinics at various places in the country. These clinics were used to get the Wasserman's in the first place and also to give treatments to those who showed positive Wassermans or Kahn's. At first they simply used hypodermic syringes for the collection of the blood, but when they saw they were having such a mass of samples to take they resorted to the Keidel tube.
The blood samples of 3,603 individuals were taken, of people of all ages, of these 1,282 or 36% were found to have positive Kahn tests. This included syphilis in all its stages, and people some of whom have had treatments and others who have not had any treatments prior to this time.

Of the individuals with the positive tests, 1,203 were placed under treatment and of this number 317 were classed as congenital and 886 were classed as acquired. By means of the field clinics these were put under treatment. 60.9% of those patients put on neo-arsphenamine completed their course of treatment. There was an average of 15.85 treatments of neo-arsphenamine injections and mercury inunctions given in 21.85 weeks.

After a completion of the various treatments another Kahn test was made on the patients. There was a reversal of 56% of the 875 cases, under the neo-arsphenamine and mercury treatments, in the Kahn reaction.

Going into the history of the patients in this survey, it was found that 49.33% of the males gave a history of a primary lesion, while only 2.54% of the females gave a similar history. This is a very strong argument for the importance of finding the contacts and sources of the
known syphilitic especially among women if we ever expect to eradicate the disease. Also a history of one or more miscarriages were frequent among the infected females.

It was found that prior to this survey that the average rural negro never had a treatment and none of them seemed to be concerned about the disease. By use of the field clinic with treatment on a large scale such as this the cost of treating the patients was $10.65 per patient.

Wenger and Ricks did some interesting work among the negroes of the southern states. In their work they used the field clinic procedure somewhat as Gill followed in his observations. This data was collected by the taking of Wassermans of the negroes, and it shows that syphilis is without a doubt a major public health problem. Wenger and Ricks examined 30,000 cases, of these 20% were positive and the age of the greatest incidence of the disease was twenty to thirty years.

Since the spring of 1927 the United States Public Health Service in cooperation with the state and city health authorities, has been making an effort to measure the effectiveness of present day syphilis control measures,
to be expressed in the difference in the case rate per thousand population of those under treatment or observation for syphilis on a certain day as compared with the case rate for the same community after a three year interval. If there were no untreated, self-treated, or inadequately treated syphilitics in the United States, a downward trend of the prevalence rate could be translated immediately into terms of successful efforts in this field, but in the light of all these indeterminate factors frequently the upward trend of the curve is paradoxically indicative of the most fruitful results.

A downward slope cannot be translated into successful efforts in the field of control of syphilis because of the large number of untreated cases which any renewed effort in the field of education and medicine in a community brings under treatment. The great variations in the changes in prevalence rates in the three year interim (1927-1930) in the sixteen communities resurveyed emphasizes the validity of this statement.

The changed rate among the sixteen communities comprising 7,000,000 population, ranges from a downward trend of 4.4% in the composite fourteen smaller communities to an upward trend in two state wide resurveys of 15 and 18%.
In fifteen of the communities there was a definite increase in the early cases coming for treatment, which fact is probably the most encouraging finding in the resurvey. Regardless of how many additional fresh infections occur, the disease will eventually be brought under control if the populace can be educated to come early for treatment of syphilis and to remain until the disease is rendered non-infectious. There is still much to be done in this direction for although there is an increase in the early cases coming to treatment there are still approximately one-half of the infected individuals who never seek treatment until the disease is in the late stage.

Based on the 1927 prevalence surveys of syphilis under the care of medical sources treatment approximately 24,500,000 of the nation's population it was estimated that there were 643,000 cases of syphilis constantly under treatment. Three years later in the resurvey, it was found there were 7,000,000 cases under care constantly. The syphilis population constantly under care changed from a possible decrease of 28,000 cases in fourteen rural communities to a possible increase of 100,000 cases in up state New York and Oregon in the three year period.
Some of the reasons for these variations have been attributed to successful efforts of the health officers in getting more and more of the untreated or self-treated syphilitic population under treatment. In upstate New York the increase is due to successful efforts to keep patients under treatment for a prolonged period of time, until the maximum benefits of treatment have been received, claiming that thus the increased patient population in clinics is due to an accumulation of cases.

In the total resurveyed territory there was a 6% increase in the case rates per thousand among the early cases and a 14% increase in late cases.

Clarke and Usilton stated that it appears that the availability of free clinics facilities appears to carry with it highly prevalent rates.

The case rates for males is consistently higher than the females, but the rate for females increased 26% in three years, but still one-third less than the present rate for males.

In the sixteen communities resurveyed there were 62.5% of the patients in the hands of a private physician, as compared to 37.5% in public clinics during the three year period a 7% shift to public clinics. This shift from private doctors to the clinic is probably due to the depression and the lack of friends.
The early cases were 23.5% in the public clinic and 31.3% in private practice. 9.4% of the population equals the number of fresh infections coming in amounting to 423,000 cases. However an equally large number are reporting for care for the first time of a late syphilitic infection.

The Metropolitan Life Insurance Company in a reprint of (31) statistics state that those who have studied sickness rates believe that syphilis is increasing, but in a study of the deaths in the United States syphilis as a factor is playing a small role and the fact that more cases are being investigated than before with a falling total of syphilis deaths shows a marked decrease. So the Insurance Company feels that the public health measures are of aid in decreasing the prevalence of syphilis or at least decreasing the number of deaths from the disease.

Dr. Schwers believes that if the person filling out a (52) death certificate would include whether there is or has been a history, the symptoms or treatment for syphilis, then the statistics for the prevalence of syphilis would be more complete. At the present time there are a vast number of cases which when they die have no mention of their syphilis so the records are not complete and we do not have the exact data.
If syphilis was eradicated from the people the effect on the mortality rate would be spectacular for syphilis is hidden in mortality statistics in a manner which tends to make the public unaware of its importance. When we recognize the toll of syphilis in such conditions as angina pectoris, general debility and organic diseases of the heart, the arteries and other vital organs and add to these the commonly specified manifestations of syphilis, such as general paralysis of the insane and tabes dorsalis, this disease ranks, as Osler said “With the greatest killers”.

Unlike certain other principal causes of death such as cancer, syphilis mortality is largely preventable. About 15% of organic heart disease and about 11% of new admissions to mental hospitals are due to syphilis. Yet both of these are preventable and controllable by early and thorough treatments.
Syphilis and Industry.

A large number of studies have been made in different parts of the United States which indicate that syphilis is a very heavy and serious burden in the various industrial groups. Of the various groups studied, 11.7% of railroad employees were syphilitic, barbers 13%, milk-handlers 4%, food handlers and drivers of public conveyances 3.7%, coal miners, 8.5%. 70% of cases fall in the twenty and forty year period which is 30% of the population in this group.

Syphilis affects industry through damages to property and expensive compensation cases; through disability of valuable workers and resulting loss of time and labor turnovers; through taxes to pay the high cost of medical care of patients in the later stages of syphilis; through lost wages on the part of the worker; through untold mental anguish of the workers and their families due to broken homes, blind and otherwise defective children and through invalidism and chronic illnesses of wives and mothers. Medical care of late results is largely at the expense of the taxpayer. As industrial and commercial firms contribute heavily to the taxes of our country, the cost of construction and maintenance of institutions for the
medical and social care of patients suffering from syphilis is a burden that rests with greatest weight upon these concerns. Also, business leaders are everywhere the principal contributors to all sorts of voluntary hospitals and institutions, which number among their beneficiaries many who need care for syphilis. The costs are colossal and the fact that these costs are hidden in the statistics of morbidity, mortality and institutional reports does not make them less burdensome.

One of the often overlooked items of cost chargeable to syphilis is the enormous loss of employee's earnings due to disability attributed to syphilis. It has been estimated on a conservative basis that lost time due to syphilis and gonorrhea together costs the wage earners of the country about $84,000,000 per year.

J. R. Garner believes that an employee who develops a primary lesion, has a great lowering of his morale, because he has acquired a loathsome infection. The worker is always under a constant dread that his co-workers may become aware of his degradation, thus under a mental and moral strain he is unable to exert his best efforts. His deficiency will be reflected either in the quality or quantity of his output.
The transmission of syphilis from the infected person to the other workers is a real menace, thus they should be removed for a while and receive medical attention, and the lesion healed and with continued treatments the person can then return to work. This is the time when many do not keep up their treatments and allow themselves, unknowingly to pass into the late stages of the disease.

Great care should be taken to prevent occupational infection, as by the use of tools, towels, and direct contact with the syphilitic.

Garner believes that there are many incipient paretics engaged in every form of industrial as well as commercial enterprises. These persons constantly place in jeopardy the lives of the public and their fellow-workers as well as themselves. They are also a financial loss by accidents and catastrophies to property directly attributable to the disease.

A failure to recognize and properly react to external stimuli is exceedingly characteristic of such cases, and this explains why danger signals may fail to arouse the subject to an exercise of proper precautions, and the overlooking of important details.
Syphilis in this stage is a possible factor in the development of post-traumatic neuroses and other conditions. Trivial blows on the head of a patient, precipitates a more active process which now appears apparently for the first time on progresses rapidly into the various forms of cerebro-spinal lues and even paresis.

Whitehead says to evaluate the relation of syphilis to occupation is most difficult. Any affection like syphilis, which is usually latent in its manifestations after the primary and secondary stages, and most subjects are ambulatory and able to get around without any apparent trouble, there is no yardstick or caliper by which we can measure their decreased industrial efficiency.

Stokes believes that food handlers and also other people infected and in the active stage should not have their fitness determined by the Wasserman reaction alone but by the state of infectiousness of the disease itself. For this reason it is exceedingly advisable to have periodic examinations for persons giving personal service to the public.
Syphilis is a great menace to the American railroad industry, as a large number of people and valuable property is entrusted in the hands of the train workers. They must be fit and efficient thus it is advisable to have periodic examinations.

One may definitely state that the efficiency of a person or industry large or small is in direct proportion to the health and fitness of the employees. It is known that syphilis disables persons, and thus employees affected are disabled sooner or later with the resultant loss of time and money for the employer.

A question which must be considered in the relation of syphilis to industry is where and how will the infected workers receive their treatment and should it come under the medical benefits of the company? (25)

A large part of the cost of any industrial creation which must depend upon mass manpower for its production is the purchase price of labor. Anything which tends to lower the working efficiency of any single producing unit is reflected in some measure through all the ramifications of the organization, to be ultimately manifest in the dividends of every stock holder.
The medical service is industrial when it is on an all-time basis. Its purpose as part of the production machine is to keep the human producing unit in the best possible physical condition for the performance of duties, and to see that they are not assigned to duties they are not physically fit to perform.

In the case of industrial workers infected with syphilis, if he goes untreated, one contingency may be expected with certainty, eventual incapacity which becomes not only total but permanent, they serve as a focal point for the infection of others. 10 to 15% of blindness is attributed to syphilis, thus think of the personal hazard which would accompany the insidious approach of blindness.

The venereal infected worker at best is an indifferent and intermittent worker, therefore expensive. The advanced luetic with the combined influence of a hazardous occupation and his physical condition, may be a positive source of danger to himself and every employee in his immediate vicinity. The ataxial syphilitic constitutes a definite proportion of those accidents in industry found recorded in the archives of claim departments and classified as "falls" can hardly be denied.
Many companies make the employee understand that the venereal disease services are not included under the regular medical benefits, but they will treat such cases only on request. It is hard to estimate the amount of syphilis in employees as they do not go to the company doctor but to private physicians and clinics, because of the fear of losing their jobs.

In many companies the attempt to put venereal disease control in the medical benefits of the company was met by great opposition. But after it was in operation for a period of time, the benefits both to the employer and employee, from longer service, reduction in lost time and accidents due to defects have been so great that the plan is now heartily endorsed.

The industrial doctor is the first cog in the industrial machine and his first responsibility is to the industry. Disabled workers having the benefits of his skill is purely incidental to the bigger job. Ethics and loyalty of the medical man are not satisfied until no human machine loses time from the job if it is within his power to prevent it.
An industry which provides medical service to employees for no other reason than a desire to minimize their responsibility under compensation laws, does not receive full dividends on its investment if its service fails to discover and treat every employee who is infected with syphilis.

Clarke gives a number of suggestions which are practical for an industry to do in self-protection of its employees and itself.

1. Physical examinations at repeated and suitable intervals and especially after an absence due to illness, including Wasserman and smear for gonorrhea, also accompanied by suitable popular instruction regarding syphilis.

   (a) Every new employee to be examined and have blood tests also instructions regarding syphilis and invited to appear voluntarily for examinations.

   (b) All re-examinations following illness to include Wasserman.

   (c) All employees to have medical examination at least once a year.

2. Every employee or applicant found to have syphilis or gonorrhea as a condition of employment should be required to receive suitable treatment. Those who are physically unfit
should be rejected but advised as to treatments and where to receive them. The industrial doctor has to answer these questions:

(a) Will the individual be a source of danger to others?

(b) Is he or she physically and mentally able to perform the duties of the post applied for?

3. Treatment of the employees should be on an economic basis so he will be able to have treatments over a long period of time. Preferably it should be under medical benefits or industrial insurance. In some cases it may be necessary to have the patient to pay the cost of the drug.

4. Prevention is as important as treatment. Educational and chemical prophylaxis should have their place in the industrial medical program.

5. The management should concern themselves with social surroundings of their employees, including provision of opportunities for wholesome recreation, improvement of housing conditions and the abolition of prostitution resorts, etc.
The Endicott-Johnson Corporation employs between 16,000 (30) and 17,000 workers and it maintains a medical department second to none to care for their health and that of their dependents and it does this because it has found there is a definite relation between the health of its workers and productions.

Whether it be the worker in the restaurant or some other position, health is important. If it be abraded skin on hands or feet he may get an infection, and slight infections or injuries frequently bring to light the more serious troubles. For instance: There was the case of a man working in concrete. He fractured his spine three days after employment and worked a week after the injury. His spinal injury was healed but he has been drawing compensation because of the luetic condition which the injury lighted up.

Klander finds that if a syphilitic workman while in the performance of his work sustains, under certain circumstances, an injury which causes any of the possible results of traumatized syphilitic tissue, his employer is liable for compensation provided it can be shown that the injury came from and in the course of his employment.
The above gives good examples why it would be advisable and profitable in the long run to protect the workers from syphilis and to treat them after their infection. The sum saved from compensation alone would probably be a very big factor in the output or overhead of the organization.

**Marriage of Syphilitics.**

This is a question which is of very great importance as it will involve a number of people. Physicians are frequently called upon to decide when marriage should or can be safely contracted, after one or the other of the individuals has been infected. Whitehead believes that the subject should be considered from two aspects: (1) syphilis acquired before marriage, and (2) acquired after marriage.

The questions that arise are: (1) Has the danger of infectiousness passed? (2) Is the danger of transmission to offspring past? (3) Are there any sequelae present which might render the subject sterile or impotent?

Fournier formulated the following rules and says that marriage may be contracted:
1. If all active lesions are absent, such as primary sore, mucous patches, or roseola.

2. If the disease is in an advanced stage. It is well known that syphilis is not readily transmitted after it has run a course covering several years and all the infectious lesions have healed.

3. If a period of immunity has been present after the last signs of the disease have disappeared.

4. If the quality of the disease has not been severe. A patient whose case runs a very severe course should not be allowed to marry unless the progress of the disease has been definitely checked and a clinical cure obtained.

5. If prolonged treatment has been employed, this treatment having been intensive and sufficient.

All the above principles should be fulfilled before marriage is allowed according to Fournier. If anyone of these conditions is not satisfied, marriage should not be permitted. Fournier in his earlier days permitted marriage in from three to five years, but later became an extremist and did not sanction marriage until seven years after the infection was acquired.
In rarer cases syphilis may be transmitted even after five years have elapsed. It is impossible to say that it is ever absolutely safe for a syphilitic to marry. Experience shows that it is perfectly safe to marry a person who has received vigorous treatment over a period of two or three years and has remained symptom free for a period of two more years. Usually the time limit in females is longer because the ovaries may remain infected longer than the seminal fluid.

Some authorities require a sero-negative Wasserman reaction as well as spinal fluid before marriage is sanctioned. This is a harsh and stern rule and in many cases is unwarranted if there is a background of efficient treatment and the usual period of time has elapsed.

The most important factor in reducing the infectivity of syphilis is time, and that from three to five years in well treated cases represents the practical elimination of the dangers of transmitting the disease. Keyes reported that the chances of an active syphilitic husband infecting his wife during the first year are twelve to one, in the second year, five to two, in the third year one to four, and all but nothing after the fourth year but none of his cases of late infection was found among patients who had been well-treated.
The Wasserman test should be no criterion for marriage in old cases of syphilis. This test may remain persistently positive in spite of treatment and yet the individual for all practical purposes would be fit for marriage. If the test should remain positive during the first three years of the disease it is only a reason for lengthening the time limit. In old cases it indicates nothing as to the danger of transmitting the disease. It is a well known fact that patients in the tertiary stage of syphilis may have healthy children.

Syphilis acquired after marriage is very serious as the danger of infecting the marriage partner is great. As soon as infection is discovered, immediate treatment should be instituted. The infected person must abstain from all sexual intimacies until all signs of infection have passed. Impregnation should be prevented until a clinical cure is obtained and the birth of a healthy child is certain.

There are many laws in the various countries and states of various degrees of strictness. None of these laws are of much value as all of them are evaded and gotten around in some way.
It is Hall's opinion that each case is a law unto itself. The fitness to marry varies with each syphilitic. It is necessary to take into consideration the age and duration of treatment as well as the serum tests. More care must be taken in regard to women as they harbor the infection much longer than men do.

One must take into consideration the economic viewpoint, as in the marriage of a tabetic or paretic. It is not very long before they require considerable care and finally institutionalized.

During the treatment of an unmarried syphilitic it is essential to explain to him the great danger in marriage before he has received adequate treatments. The physician has a great responsibility for on his judgment may rest the health and happiness of a great many people in regard to the proper time to be married.

When a male syphilitic marries the wife should be checked frequently and attempt to avoid conception if there is any doubt of syphilis in the wife, at least until three or five years after marriage. If pregnancy should occur begin active treatment immediately.
Ignorance is the curse of the world. Education should start at home and can accomplish more in the control of syphilis than laws and regulations. 90% of the men are infected before marriage and 67% of the women are infected after their marriage.

Every woman has a right to know whether the man she is to marry has syphilis. Ignorance of the disease is hard, as a girl who marries who never heard of syphilis, has a child and comes to the doctor and is told of the disease, and the long course of treatment which is necessary for her and her child. If ample funds are available for treatment she may accept her fate and fight out her life with the man she has chosen, or she may travel the road of reproaches, separation, broken home, divorce, long drawn out expense and treatment and discouragement, promiscuity and ultimately prostitution.

If the contracting parties have married with a full knowledge of their responsibility and danger, they are due very little sympathy. The children, if any, pay the penalty. The condition of children with congenital syphilis is most appalling for they have offended neither the laws of God nor man yet they carry the burden of ignorance, neglect and carelessness for which they had no hand in doing.
Some states prohibit the male and not the female to get married, or require them to have an examination first. Wisconsin law requires the male to have a physical examination fifteen days prior to such application for license and health certificate filed with clerk when the license is obtained. Also there is a clause saying that the doctor cannot charge more than three dollars, which is entirely inadequate to stand the expense of the required laboratory work.

Legislation therefore, is not only useless in that it protects the unscrupulous, penalizes the honest and deceives the people by fake certificates, but it lulls the community as a whole into a false sense of security concerning the true prevalence of the disease.
Prevention.

EDUCATION.

Education is or should be the first step in the prevention of syphilis. It appears the newspapers and magazines are the ideal ways to provide an adequate means of distributing information to the public but the editors are afraid the people will not like it as the public does not understand that the disease is a major public health problem and must be fought as such.

Education should begin in the home when the child first starts asking questions about sex. The parents should inform him of the true matter and not keep the child surrounded by a group of lies, and allow him to learn from unreliable sources. The children of grade school and high school age should be instructed as to the facts and significance of sex through a program of sex education integrated with such subjects as hygiene, biology, botany, nature study, social science, etc. As the child is older he should be taught the dangers of promiscuous sexual intercourse and association with prostitutes, this is best carried out in
the atmosphere of the church, and told in an atmosphere of simplicity and beauty. The largest percentage of parents have to be taught these things before they can be expected to teach the children.

It is very necessary to educate the youth to keep their mind and body clean, and to advocate personal purity and to explain the ravages of venereal disease. Recreational means, playgrounds etc should be provided to keep the young persons' mind occupied and also their bodies. Idleness is the mother of leechery, and a young man will find that absorption in any pursuit will do much to cool passions which though natural and proper, cannot in the exigencies of our civilization always obtain natural and proper gratification. (19)

CHEMICAL PROPHYLAXIS.

Keyes believes that the research organizations should make a special effort to find a good means of minimizing the chances of contracting syphilis after an exposure. (24)

The exposed individual should have some means of receiving a prophylaxis as in a clinic, or propaganda should be spread so as the person can get material at a drug store.
soon after exposure. If the druggist is to be of help he can advise a person not informed of prophylaxis as to what to use. It should be remembered in the education that strong soap and water is a very good preventive.

LEGISLATIVE PREVENTION.

About the only means in which the prevention of syphilis can be carried on by legislation is by the control of prostitutes. This is hard to do as they are bound to operate and hard to stop them.

Prostitution has existed since time was young and will continue to exist. The way to combat it, is by the education of the public to keep away from such practices. This is of benefit for the more intelligent person but the ignorant and lower classes will continue to patronize the prostitutes.

Another means of legislation is by the requirement of quarantine or probation in the case of an infected person, especially so with a prostitute. This was tried in Omaha, but was discontinued due to financial reasons.
Notification.

There are two methods of reporting the communicable diseases, that is by "true and false" reporting. By true reporting is meant the reporting of the names and addresses of the infected persons. False reporting is when the case is reported by number alone without the name and address.

Health officers as a class have favored the reporting. The model law drafted in 1913 by the United States Public Health Service, which specified that the name and address of the patient need not be given. Statistics thus obtained are of little value, and are misleading. Cases cannot be identified, many are not reported at all, and others are counted several times.

The private physicians previously were almost unanimous in their disapproval of the law, knowing that to report falsely, that is by number is to play delicately around the edge of the problem. Whereas to report by name is to deprive themselves speedily of patients suffering with the diseases in question. Other bad features are that these people turn to quacks, charlatans, etc with the inevitable result of making the disease less controllable and more severe in its late manifestations.
The laymen think that syphilis is shockingly prevalent and that persons with the disease are shielded by their doctor. People think it is a disgraceful, shameful disease and those afflicted go in hiding. The more intelligent are gradually seeking medical advice. These doctors must and will protect their patients, hence to that extent the disease is not reported. Those cases in the hands of quacks are not reported. As the law now stands it is of no practical benefit to anybody. Its aim is to protect the community against an individual with contagious disease without any corresponding benefit to him and with some probability of harm.

I believe Gehring goes a little too far with his idea of more harm being done than good by the reporting of cases. Vaughn is of the opinion that the first essential is to report by name and address as the statistics are not true if reported by number. Then if the patient has not had adequate treatments the health officer must contact the patient and see that he does receive the proper treatments. Hancock is also of the opinion that the venereal diseases should be reported so as to keep a check on the patient.
Nelson believes that reporting should be made easier and the doctors should report the disease promptly and their course of treatment so the health authorities know the status of the patient.

The State of Delaware since 1931 has begun enforcing the notification law. They first sent circulars to the licensed doctor and pointed out the value of reporting the disease then they began to enforce it by removing the doctors license if he was detected as not reporting the disease. Since 1931 there has been a larger number of reports. Again this is a fault as it applies only to the licensed doctor and allows the quacks and others to go free.

**Treatment Centers for Syphilis.**

**PRIVATE PHYSICIAN.**

According to the reports on the number or percentage of cases treated by the private practitioner, it is evident that here lies a big and important factor for the control and adequate treatment. So the doctor should be able to receive information and instructions for the diagnosis and treatment of his cases. Snow believes that provision should be made to provide education of the doctors as to diagnosis and treatment and have adequate means for follow up and facilities for continued observation of poor cases, the latter should be the work of the state or county boards of health.
Parran states that a United States Public Health (39) Service Survey showed that 64% of the syphilitics were treated by private physicians and 36% in public clinics, hospitals and similar institutions. Whitehead puts the figure at 70% of the cases (61) in the care of private physicians in the city, and about 100% in the rural communities. Morgan thinks that about 60% of the (33) cases are in the hands of the doctor in private practice. However this shows that the large majority of cases are in the private practice.

The physicians in private practice, due to the fact that they have over 60% of the syphilitics under their care, have a responsibility to the public such as he bears in no other (40) instance in his relation to preventing the spread of disease. On account of the very nature of the mode of spread of syphilis and the resulting secrecy with which its occurrence is surrounded, the family physician alone, usually is aware of the identity of the case and in possession of the opportunity not only to treat and advise the patient but to secure information and endeavor to apply measures, that will lead to the discovery and elimination of other sources of infection. He it is, also, who frequently has the first opportunity to find the hidden case of syphilis and to being it under treatment. If he fails to assume and discharge this responsibility properly, it may be because he has not had the opportunity to see the problem from the point of view of prevention. Thus it should be taught him by the health officer
or the state as it is an important fact.

Before taking up the matter of the private physicians duty in the education of the public, it may be well to discuss the attitude of the patients with syphilis. Nickols took a group and interviewed them to get their reactions and knowledge of the disease.

Status of Patient.

The average age of the patients interviewed was twenty-nine years. 37% of them were married, 52% were single, and 11% were separated. Of the patients, 32% had elementary school training, 8% had been part way through high school. Most of the patients were employed in ordinary domestic service.

Impression of Patient's Knowledge and Attitude.

Origin of infection. For the most part the patients had no knowledge of the source of their infection. Eight primary cases stated that they had sexual intercourse with "charity" girls and believed them to be the source. One suspected his wife and another suspected a roomer, the rest were ignorant of their source of infection. Here are the reasons for the negative attitude: (1) Not aware of the chancre, (2) Refusal to admit, (3) Congenital, and (4) Actual forgetting of chancre.
Previous treatment experience. There was a large number giving no history of infection, which reported drugstore diagnosis and treatment for a condition which may have been related to syphilis. A number claimed they had no drugstore treatment of genital conditions. There were no admissions of going to quacks for treatments.

Knowledge of the serious nature of syphilis. Ignorance of the gravity and the mode of transmission was quite general among the patients. There was no association of their blood condition and syphilis. Eleven of the men interviewed were ex-army men and they knew a little about the disease.

Understanding of the possibility of infection to others. The group as a whole did not know the means of transmission. The majority were continuing their sexual relations as the doctor had not said they could not. Those that did inquire were only concerned as to whether it would make their condition worse, and did not think of the possibility of infecting the other person.

Knowledge of correct terminology. As a general rule the ignorance of sex and reproduction was quite apparent. The patients did not know their condition, nor did they know the connection of their blood condition and the lesion. They all had an obscure, slang expression to relate their condition.
Knowledge of hygienic measures. In this question the army men were exempt. The rest of the group were in complete ignorance, except one who knew of the value of soap and water.

Knowledge of length of treatment. None of the patients had an idea as to the amount of treatment necessary.

Extent of sex education. None of the group had any sex education.

From the above it is evident that there needs to be considerable education of the public, not only as to the prevention of the disease but also to the importance and length of treatment after the disease has been contracted. As the private doctors have the large portion of the cases and meet the public in general he is the person to give the public a good foundation for their education in this line.

For the patient himself and also the public, he should know of the great advantage of early diagnosis and long continuous treatment if he has ever any ambitions to overcome the disease. He should be told the results of inadequate treatment which show up not in the present or near future, but in the far future which will wreck his own life and body, but also the happiness and contentment of his dependents.
There is no disease that the public knows less about, and no disease which is of any greater importance. Syphilis is very prevalent and very controllable, so why not educate the people to that phase of the disease, rather than let them think of the moral aspects of it. When the taxpayer knows that syphilis is preventable, controllable and curable he will support the public health and private programs for its control and ultimate eradication. Free clinics for its treatment by state, county and city organizations. Free arsphenamine should be provided for the persons not near a clinic.

Linfield believes that the public must be educated to all these matters: social hygiene, results of infection, personal prophylaxis, personal hygiene and strict legislation.

During a discussion on the relationship of a private doctor and a syphilitic patient, the subject of the cost of the treatments and the patient's ability to pay for the treatments is of paramount importance.

During the past few years especially the syphilitic has found it extremely difficult to find work and money enough to pay for the treatments. In that case, if a free clinic is close and convenient he will go there, regard-
less of his pride if he is an intelligent person. So far the practicing physician it is essential not to overcharge as it is known that the treatments are required for a long time and will naturally be hard to meet. Bromberg and Davis (2) have done some work on the cost of treatment. The cost for an average course of treatment for a case of syphilis cared for by private physicians varied from $268 to that of $1,050 of the specialist.

The cost in clinics vary as to the way it is handled. Clinic X is entirely self-supporting and they charge $135.50 for two physical examinations, 26 neoarsphenamines, 26 bismuth injections, 8 Wassermans on the blood and one spinal. Clinic Y, does not pay rent but does pay the doctors in charge. The cost here is $169.50.

From the above it is readily seen that the patient of moderate means will immediately switch to the pay clinic, rather than pay the premium for a private doctor.

Davis lists the considerations which affect the (12) ability to pay for syphilitic treatments. (1) The treatment of syphilis requires a long period of time. The average is three years. One must think of the ability to carry on treatments for this long period of time. (2) The disease is most prevalent among young persons between sixteen and thirty years,
when earning power is comparatively low. (3) The feeling of shame and secrecy, and the individual unwilling to inform his family. (4) Payments for the care of a case must extend over a long period of time and ordinarily comes due in a series of payments, which is very hard to meet and drains the savings. (5) The infectiousness of the disease and the great economic loss that make it especially important that adequate and complete treatment shall be secured by those infected. About one-third of the cases are not acquired through illicit sexual relations, so the problem must be dealt with as a health issue and not a moral one.

**VENERAL DISEASE CLINICS.**

Wenger gives a very good composite description (59) of the type of clinics and their management:

1. Definition. An institution for the control, detection and treatment of the venereal diseases.

2. Function. Major functions, (1) to detect and uncover the venereal diseases, (2) to institute proper and adequate treatment, (3) to carry on scientific investigation, (4) to assist in training personnel, (5) to apply in a practical way the principles of venereal disease control measures to the patients. These principally are the educational medical and legal measures.

3. Role of the Clinic. (1) To uncover the sources of infection, (2) to treat such cases when brought to light in order that the patient may be rendered non-infectious as early as possible to restore the patient to health, and by early treatment to protect the individual infected
his family, the community in which he lives and society in general.

4. The Need of the Veneral Disease Clinic. (1) No one measure alone will ever solve the veneral disease problem. (2) Educational measures may prevent exposures, but at best these cannot reach all groups. (3) Medical measures aid in prevention by sterilizing cases that are infectious. This patient may expose himself again and get a new infection, (4) Legal measures alone not sufficient to protect an individual from his own folly or that of another, (5) Co-ordination of educational, medical and legal means, will make progress, (6) Clinics are needed as the educational and legal means are not enough. The economic conditions are important, clinics permit the patient to receive proper and adequate treatment, which he would otherwise be denied, due to finances.

5. Type of Clinic. (1) Integral part of a general clinic with hospital facilities and under the control of a medical school, rather than an independent unit, as patient usually will apply for treatment of some other ailment. (2) Many cases of obscure veneral disease, uncovered in other special clinics. Hardly a case, but what is transferred to one of the other clinics for a special examination. (3) Emphasizes the many well recognized ramification of the veneral disease. Thus the advantage of a polyclinic. (4) Hospital connection, as many cases need hospitalization, also you have a large teaching staff.

6. Personnel. (1) Selected from a group of trained workers. (2) Qualifications of a veneral disease worker are: (a) Sincere interest in entire problem. (b) Proper training and experience. (c) Tact plus a good working knowledge of human behavior. (d) Common sense and a sense of humor.

7. Clinic Management. (1) Great opportunity for service sometimes offers opportunity for human error. (2) Rewards are few, griefs many, new problems, individual and to the policy of the clinic. (3) Each case is a definite and distinct problem, both medically and sociologically. (4) Some patients cooperate, others insist on making trouble, legal means should be used.
There are many objections and shortcomings of clinics, especially of the free clinics. Waddell gives a few suggestions (57) which should be tried to make the free clinic a more attractive place.

In the location of a clinic it should be in a hospital for the most conveniences as the various facilities are close at hand. Also for those people who have considerable pride, it is better to be seen walking into a hospital than a jail or city hall. Cleanliness and individualization of the patients should be expressed. Routine is highly efficient but one cannot treat all of the cases alike, however it is hard not to resort to routine where the patients are many and the time is short. The clinic should not dabble in therapeutics but treat each case with the well recognized practice for a number of years. There is the indispensability of harmonious cooperation among all the units of a public health clinic. Police power should be invoked on those who do not cooperate. It is very desirable to have a social worker to follow up and make the various irresponsible cases come in for treatments. The clinics should not allow patients who can afford to go to private physicians to come to the clinic. However it is very difficult to do this as it is hard to check up on the people.
In the treatment of syphilis the ideal social hygiene (38) programs include: medical measures for the diagnosis and treatment, educational means as lectures by members of the staff especially to those in the infectious stage. Dr. Stokes (56) gives a very adequate and complete list of instructions for the syphilitic patient, they are:

1. Do to others in this matter as you would wish them to do to you, if you were well and they sick.

2. Don't kiss. Change your disposition if you have been effusive.

3. Sleep alone.

4. Trust wife or husband with the facts.

5. Have your own towel and dishes at home. When away, eat where you know they scald the dishes.

6. Never use another person's shaving tools, his cup or dipper, his spoon or other eating tool, his pipe or cigarette holder, his toilet articles and never let him use yours.

7. Consider every open sore infectious until you have seen your doctor. Burn the dressings.

8. Watch for "patches", cold sores, cankers, pimples, chafes and piles, and see your doctor if they appear. Consider yourself infectious.
9. Get your doctor's instructions relative to sexual matters, and follow them.
10. Don't smoke, if you are within five years of the beginning of the infection.
11. Don't worry, keep free of mental strain as much as you can.
12. Sleep eight hours a night.
13. Avoid overwork, but keep reasonably busy.
14. Gain weight unless your doctor says not to.
15. Exercise as usual in the open air, unless otherwise instructed.
16. Avoid chilling and getting wet.
17. Report all colds, coughs, sore throats and other infections to your doctor while you are under treatment.
18. Avoid injuries. They may start trouble. Be especially careful to avoid sprained joints and blows on bone.
19. No alcoholics.
20. Realize that your chances are good for recovery and make the most of them.

The educational measures in the treatment and care of syphilitics should be to educate and inform the public as to the importance of venereal disease.
The legal measures of the control unit should be to enforce and control the indigent cases who do not want to or will not receive treatments. The retention of prostitutes is where the legal measures come in, at times necessary to enter a complaint against them and get a sentence to a retention home.

Social Service.

Another very important measure, and one which is being used to a greater extent is the use of the social service worker. Ruth Lewis states that they are very valuable for follow up and the keeping of the unresponsible type of patient coming back for treatments.

Social service follow up measures are carried out by visits, letters, telephone interviews, interviews with friends of the patients who may have the infection, the various relatives, other workers in institutions, with school nurses and teachers.

After a diagnosis of syphilis on a new patient the social worker interviews the patient and explains the importance of syphilis and the serious results if the disease is not cured and well treated. Financial arrangements are made at this time and a card index file is filled out. This saves considerable time for the physician as they usually are quite busy with the treatment and diagnosis of the other patients.
The social service worker is very instrumental in securing the source of infection and the various contacts of the infected patients. On securing these names the worker brings them in for examination. If the worker cannot bring the contacts into the clinic, the case is reported to the board of health.

Much diplomacy must be used in various cases of the contacts, as with married couples, they must be very careful as not to cause any more domestic disturbances than necessary.

The importance of the social worker in locating sources and contacts is to discover cases which have probably been unnoticed and would not have come in for treatments if it had not been for this worker.

If the worker is not of value in any other phase of syphilotherapy it is in the bringing in the known syphilitic pregnant women, to receive strict, rigid treatment pre-natally so as to lessen the possibility of congenital syphilis. This is very important as with good treatment the child can be born without the disease. Congenital syphilis is a very great handicap as it is something forced upon him which could have been avoided.
Many of the venereal clinics are using this now which is one of the reasons for the increase in the prevalence of the disease, as they bring in all possible contacts and suspected individuals.
STATE PROGRAMS AND CLINICS.

The New York State program for control of syphilis is:

(33)

(1) State aided and state-wide system of county boards of health under the direction of trained full time health officers, (2) A similar whole time direction of city health service in larger cities, (3) The extension of the system of approved local laboratories for the diagnosis to cover areas not now being served, (4) Distribution of neo-arsphenamine freely to all physicians on the same basis as other biological products are now distributed, (5) The requirements that every country and city board of health provide facilities for the treatment of the venereal diseases, irrespective of whether the patient actually is infectious or indigent, (6) Clinics established by these local boards of health to meet the standards prescribed by the state commissioner of health, (7) Clinic directors to have qualifications approved by the state public health council, and (8) Educational measures.
The Kentucky requisites are: (1) Veneral disease reported to the state board of health, (2) Infectious persons may be quarantined, (3) Prostitutes deemed infected and may be quarantined, (4) All persons by common repute said to be prostitutes may be quarantined, (5) All persons in association with prostitutes may be quarantined. The police bring in all known prostitutes, who are examined. If they are found to be infected, they may be quarantined or paroled with the understanding that if they obey, they will be handled with kindness and treated. Thus the word passes and others see the benefits of the treatments and come in for examinations. Social workers are employed for the various follow up jobs, and to check the finances of the patient so that the clinic does not treat one able to pay for a private physician. Educational data is disseminated on all subjects, as prevention and dangers of late or inadequate treatment.

The Delaware state public health board requires early notification of the disease, which has been enforced since 1931 with a larger number of reports. They maintain clinics for instruction in therapy, diagnosis and treatment. Also provide the giving of bismuth, arsenicals, and mercurial preparations all over the state. Use a system of follow up, which as yet is not quite
adequate but is being improved. Have free laboratory for the various serological tests and educational work is carried on but not to as large a degree as it should be.

The Pennsylvania State Department of Health maintains clinics over the state for the diagnosis and treatment of the venereal diseases. There are sixty one under direct supervision by the Department of Health, there are one hundred seven clinics operated by hospitals and over which the department has no jurisdiction whatever.

The purpose of these clinics is to control the dissemination of venereal disease by tracing the source, treating and isolating where practicable. The state is not primarily interested in treating latent syphilis or neurosyphilis, nor those cases which are non-infectious and not a menace to the public health. An effort is made to find those able to be treated by the private doctor. The Department seeks to cure, if possible, all active infectious cases of syphilis, and does not confine itself to simply clearing up open infectious lesions. Social service follow up work is also used.

The Kansas City Department of Health use considerable social service work. They make a check every two weeks to find those who are irregular or are delinquent. The social worker sends out requests to return regularly, and about 40% of these return.
During the infectious period they try to place the patient in the Isolation Hospital.

Other features of the clinic are: (1) examination of street walkers brought in by police, (2) examination of delinquent girls, brought in by the social service agencies relative to venereal disease and pregnancy, (3) maintain service where private physicians may send patients for blood tests, and other examinations, (4) cooperation with state board of health and United States Public Health Service in reporting and controlling venereal disease.

At the present time all that the State of Nebraska does in the way of syphilis control is the requiring of the reporting of every case by number. The State also issues a limited amount of arsenicals and mercurials for the cases that cannot afford treatment. Educational procedures are carried out by the dissemination of pamphlets to the doctors, and also on receipt of a birth certificate, the parents are sent all the information on sex education and prevention of venereal diseases. This is with the idea that the parent needs to know about these things so they will be able to pass the information on to their offspring at the proper time.

In the City of Omaha, there are three clinics, one at the University Hospital in association with the University of Nebraska, College of Medicine. This clinic takes care of about one hundred patients with the view of having enough for instruction of the disease to the student body. Another clinic is at the Creighton University Medical College.
This clinic runs a fewer number of cases than the Nebraska clinic, its purpose is for teaching also. The third clinic is at the city jail, run by the city and health board. The purpose of this clinic is to treat the prostitutes. In previous years they had an isolation ward at the jail where the infectious prostitutes were detained until they were non-infectious, but due to the economic measures this was stopped. The city clinic handles about fifty cases of syphilis. This makes a total of approximately 250 persons being treated at the clinics. Taking into the consideration the number of people in Omaha, this leaves the vast majority of syphilitics in the care of private physicians, or are not receiving treatment at all.

Snow believes that if the duties of the police court and probation service of the various communities are properly carried out and have adequate facilities, the health of the community will not be endangered. When they apprehend a criminal or prostitute they should be given a complete examination, if infected should receive treatment, and if convicted and sentenced, the detention home should continue the treatments, if put on probation they should be made to report for treatments.

The duties of the health department medical officers or social service workers do not present any problem for the police or court action unless a person refuses to carry out instructions of the health officer. In such cases the health officer prefers charges and the police and courts proceed as in all other violations of the law.
Snow in another article brings out some very good points in the discussion of clinics:

1- The strength and importance of the doctor-patient relationship in the treatment of syphilis.

2- Evidence that a fraction of the medical profession has a tendency to exploit the syphilitic patient financially.

3- Evidence that careless patients themselves are more to be blamed for interrupted treatment than the cost of care.

4- That the protection of the community against syphilis as a transmittable disease has not been adequate when left to the medical profession alone and probably never will be.

5- That the problem is definitely a public health problem.

6- That some method should, and probably can be worked out whereby cooperation between the medical profession and the public health service will improve existing conditions.

7- The pay clinic is only one suggested method, if the medical profession can advise a better one let them do it, and it puts the problem up to the private physician.

Along with the treatment and control of syphilis it may be well to give the common errors in diagnosis and treatment of syphilis which are frequently and repeatedly made:

1) Wasserman and dark-field frequently emitted.
2) Accept statement of soft chancre and no further investigation.
3) Negative Wasserman eliminates syphilis.
4) Belief that aortitis is simply valvular disease.
5) History of repeated miscarriages, not arousing suspicion.
6) Gumma usually associated with varicose veins.
7) Patients with un-united fractures, go with no suspicion of syphilis.
8) Gastric crises for 'gall stones'.
"chronic appendix", "gastric ulcer", "stone in kidney". (9)
Pellagra as syphilis and vice versa. (10) Gumma often termed malignant. (11) Eye changes and no suspicion. (12) Strictures of rectum and not suspected. (13) Paresis not diagnosed only by expert witness on a murder trial. (14) Social standing of patient rules it out. (15) Wife and children of a known syphilitic not examined. (16) Spinal fluid tests, as a rule are not done.

The practicing physician and the medical man in the clinics, also the health officers and nurses and social service workers should have a very good, clear definite idea of the infectiousness of the disease.

Dr. Stokes in his article on the control of syphilis gives a very good and complete summary of the facts of infectiousness:

1- The more recent the infection, the more dangerous.

2- The blood Wasserman reaction is not a guide to infectiousness or non-infectiousness.

3- The most infectious lesions are: chancre, mucous patch, condyloma, moist papule.

4- The places to look for infectious recurrent lesions in inspection are: lip, mouth, faucial pillars and tonsils, sides and bottom of tongue, axilla, nipples, inguinal folds, labia, penis, scrotum, anus (piles).

5- All open or eroded lesions in early syphilis are dangerous.

6- Infection is also transmitted by semen and by benign non-syphilitic lesions (herpes) in patients with syphilis.
7- Syphilis is transmitted by intimate contact of moist surfaces: i.e., by kissing, sexual intercourse.

8- Moist articles and discharge-bearing dressings and articles of common use can also carry infection.

9- Thorough washing in hot water and soap disinfects contaminated objects. The additional precaution of boiling dishes, utensils and such articles as douche, nozzles, instruments, etc, in soda solution may be used.

10- Dry objects, and dry (not crusted) lesions are non-infectious.

11- Pyogenic infection reduces the infectiousness of the local lesion.

12- Trauma by an infected object (knuckle striking teeth, needle prick) makes infection almost certain, it may be hematogenous and without chancre.

13- Transfusion is a means of transmitting syphilis. A single negative blood Wasserman test in the donor does not protect.

14- There is a distinct infectious relapsing type of syphilis that must be watched for. To such a patient, no assurances can be made.

15- Local irritation favors infectious recurrence: dirt, sweat, discharges, friction (intercourse), tobacco (smoked or chewed).

16- Time diminishes the infectiousness of syphilis after five years, a few cases are infectious: desultory, non-curative treatment, with relapses, may prolong infectiousness many months or years. No treatment can guarantee the non-infectiousness of syphilis indefinitely.

17- Secondary relapses have been seen with general paresis after twenty years. Inadequate treatment favors infectious relapse.

18- Late syphilids are not infectious even though open lesions are present. Do not confuse with recurrences.
19- Mercury does not control infectiousness.

20- Bismuth, while more effective in this respect than mercury, is less so than arsphenamine.

21- Arsphenamine controls infectiousness, probably as long as a month from the last dose.

Dr. Carle gives a very good report on the follow up of patients after a lapse of a long period of time. Dr. Carle had 415 patients between the years 1900 to 1910. These cases were treated with calomel injections, mercury treatment by mouth or in infections. In 1920 they were given injections of soluble mercury and with this method secondary manifestations were very rare, and immediate tertiary accidents were non-existent.

One Hundred fifty-four of the four hundred fifteen showed late results. In 51 the disease for which they returned may have been due to syphilis, 143 were not syphilitic and 64 showed no pathological changes while three were cases of re-infection. This review of cases was after an interval of thirty years from the primary infection.

This quite definitely shows the advantage of adequate treatment in the primary state.
This subject has been discussed considerably in the foregoing pages. However, it has been noticed by many workers that there are many scattered small epidemics, among a class or group of people.

The Epidemiologist's work is to find these hidden cases and bring them to light, as there may be one person wholly without knowledge of his condition who may be passing it on to many other persons.

The prostitutes are the persons who have a large role in the spread of syphilis. Practically all prostitutes are infected as it would be extremely difficult to remain clean, with the association with the large numbers of persons of all descriptions, which the prostitute is forced to deal with. If this factor could be controlled it would mean a large decrease in the incidence of the disease.

The promiscuous person also plays a big role and probably as large a one as the prostitute as she tries to be careful and employs inspection and prophylaxis which may be quite crude, whereas the promiscuous, clandestine or charity girl seldom if ever tries to prevent a chance infection.
W. L. Munson who is the District State Health officer (34) at Granville New York, thinks that the control of syphilis depends on three very definite and distinct factors:

1-Reasonably early and accurate diagnosis
2-Early and proper treatment
3-Sole leather epidemiology

The first two factors have been taken care of and discussed in the foregoing paragraphs. The question of sole leather epidemiology is the topic we want to take up now. From the statistics we are apparently not making much headway in the eradication of syphilis. Munson believes that the failure to control the disease is quite definitely due to the fact that the cases are not properly investigated along practical epidemiological lines.

In the control of syphilis the epidemiologist must go to work on the disease as they would with a case of typhoid fever. If every case of syphilis were investigated and proper attention paid to the contacts as is done in other diseases, it would not be very long before medical students would have difficulty in obtaining clinical material enough for instruction in this disease.

Syphilis is susceptible to very accurate tracing. The epidemiology for the most part is no more difficult and involved than small pox. Probably the biggest difficulty, when investigating the disease, is the failure to speak and boldly with our questions and to proceed
with our investigations with the same diligence that we would
in typhoid.

The following are some investigations which Dr. Munson
carried out and the means of curbing epidemics of the disease.

*Case 1.*

A Sunday school teacher from a community came to the
Director of the Division of Social Hygiene and stated that the
wife of a certain official in her community was "dosing my boys
with a bad disease".

Dr. Munson stopped at her town and talked with her and
became convinced of the honesty of her suspicions and also of
their validity. As a result of this he made an investigation
which uncovered more than the teacher had suspected. The Wassermans
for the community were checked up. There were a large number,
seventeen positives, all under fictitious names, but almost all
of them by one particular doctor.

This doctor was called upon and told of the information already
on hand. He then gave several leads and considerable information
concerning the cases.

The first lead was the station agent. He had been infected
with syphilis by the wife of the official. The station agent was
one of two men then "keeping company" with a school teacher, and
this teacher became infected from the station agent and then married the other man. The teacher passed this acquired syphilis on to her innocent husband, who when Munson saw him, had not the slightest idea that he had syphilis although he had a mouth-full of mucous patches at the time. The teacher became pregnant and miscarried a syphilitic fetus. She was outside her home town in another community teaching when her secondary lesions developed. The diagnosis was German measles and she was kept under isolation, until the first physician in her home town, who had all the other cases, made the correct diagnosis.

The other infected persons when investigated disclosed that their infection was unquestionably of the same source, that of the wife of the public official.

It was found that this woman was unquestionably about as promiscuous as it was humanly possible to be. Munson believed her to be a nymphomaniac.

It was a fact that this woman took her fifteen year old daughter as a companion on some of her escapades, although the husband tried to compel his wife to cease her immoral actions even to the point of horse whipping her.

The woman and her husband knew of their disease but would not continue treatment. The husband has a complete necrosis of the nasal bones.
Munson went to the official and told him the facts, which he denied. He was warned that his wife must stop passing syphilis around the community and if a new case was found she would be locked up, and that they must have treatments.

The result was that they got all of the contacts under treatment, the man and his wife went back to their treatments, and after a lapse of time there were no more reported cases from that community.

Case 11.

There were several positive Wassermans being reported from the community. The sources of information in a town are the postmaster and station agent, the latter was questioned and told the name of the woman who was spreading the disease. This woman was sought out, and proved to be syphilitic. Eleven cases were traced to this one personal one. She was very difficult to manage so a complaint was filed against her and the judge upon evidence presented committed her to the Albany Hospital where she was detained and treated until she would no longer be a danger to the public health.
Case III.

Two young girls came to a doctor in a vacation area and consulted him about their "cold sores" which could not be healed. The doctor suspected the sores were chancres of syphilis and examination also showed the girls to be virgins. Here is the story:
Both of these girls had been kissed by the chauffeur of a family summering in the community. Investigation of the chauffeur showed him with a mouthful of mucous patches. He at first stated he would not state where he acquired his infection. With more urgent questioning he placed the source of the infection on a certain woman in town, who was then investigated. She was very indignant and vehemently inclined to resent the intrusion into her private affairs. She was found to have a positive Wasserman and was then given the choice of telling Dr. Munson or the judge, the names of the men whom she infected. She finally became convinced it would be better to tell the truth. Tow other men were found infected. All the persons were treated by private doctors, but the woman who was sent to a clinic in a nearby city. No other cases reported from her as a source.
Case IV.

The following investigation was made by Dr. John A. Conway. Thirteen cases of anal chancre were reported in college boys. After several weeks of investigation the source of infection was found. After a good deal of hammering one boy eventually admitted relations with a young colored chef employed at the dormitory of one of the colleges. This chef, by the time the information was obtained, had departed for parts unknown.

The matter was then reported to the district attorney, who secured an indictment, the chef being found and apprehended cooking at a boys summer camp. He was arrested and sentenced to Elmira reformatory for an indefinite period. This colored boy, 23 years old, was always neat and well-dressed. He was popular with the boys at the university, and he was the only colored person in the village.

In but one instance did he give any money and that was to a farmer boy who delivered vegetables to the college, the amount being 25¢ each time. It might be noted that this boy was the only one of those infected who might be classed as subnormal mentally, the others being normal college students.
The fact of venereal disease being carried from place to place and starting up little local outbreaks is in Dr. Munson's opinion the means of keeping up the rate. The following relation of facts unquestionably has been duplicated many, many times.

An Uncle Tom's Cabin Company came to a community and played a one nights stand. The result was one case of syphilis and three cases of chancroid, who were patients of Dr. Munson. The case of syphilis was in a married man who passed it on to his wife, and she is now under treatments for syphilis without her knowledge of what she had. This man acquired his disease from the person who portrayed Little Eva.

These cases occurred in one community during a one nights stand. It is fair to assume that there were many other cases in other towns due to this company. If the cases had been promptly reported and epidemiology done on each one knows how much suffering and how much disease would have been prevented.

Munson believes that every case of syphilis should have a hard boiled, determined, and bold epidemiological investigation.

Parran also believes that the epidemiological evidence argues (39) for the practicability of control and eradication through direct
public health action. Syphilis appears to spread chiefly through a series of localized outbreaks which can be traced to comparatively few determinable sources, the bulk of infection in the white race is concentrated in the cities, most of the cases have a limited period of infectivity, and elimination of infectious sources will have a cumulative effect on the trend of the disease.

The existence of an unknown percentage of sub-clinical cases, many of which are infectious does not in Parran's opinion invalidate the major conclusion. A large proportion of cases are acquired from untreated and inadequately treated cases. These can be made non-infectious by treatment. So to rid the country it is necessary to employ the epidemiologists method of approach.
SUMMARY.

Syphilis is a disease which became known over the entire European continent shortly after the return of Columbus from the New World. Prior to this time there is no evidence that the disease was known in Europe. Some authors and investigators have presented evidence which they thought proved the presence of syphilis before the year 1500. However, it was evident that the bulk of the evidence is from the American continent and that Columbus and his crew carried the disease to the Old World where it spread very rapidly over a fertile virgin soil.

From the figures set forth by the various surveys of different locations it is evident that syphilis is quite common and more so than the laity believes it to be. It was estimated that there are over 600,000 cases of syphilis under medical care in the United States. In reports from a maternity hospital, 6.9% of the patients had positive Wasserman reactions. In the south a survey was made which showed a positive Kahn reaction in 36% of the people tested. In the one day surveys of the United States Public Health Service, the first survey in 1927, the second in 1930, showed a 6% increase in early cases and a 14% increase in the late cases of syphilis.
Industry is very heavily burdened by the ravages of syphilis.

It was roughly estimated that the wage earners, due to lost time, lose about $84,000,000 a year. This amount is nothing in comparison to what the industries must lose through lost time, inefficient workers, damages and compensation caused by syphilis. The purpose of the medical department should be to keep the human elements in good condition. This cannot be done if the syphilitics are not cared for as well as the injuries and other things included in the medical benefits.

Syphilis and marriage is a large problem which will tax the medical man to say for certainty when a syphilitic may marry. It is not only a question of the infectiousness of the disease but also, will the person, the man in particular, develop the late stages of the disease and then cease to be a bread winner, and become a burden on the wife. Legislation for the control of marriages is not effective and will not make the people take the precautions of examinations. The means, is education, and teaching the person that it is their place and privilege to find out if the other person is healthy and fit to marry.

The control of syphilis should be carried on, not only with the idea of treating the existent cases, but also to prevent the exposure of healthy persons to infected persons. The control therefore,
must be carried on by the education of the public, and make them know what syphilis is, how and where it is contracted and in case of exposure how and what to use for prophylaxis. The treatment of active cases is important, as if all the infective cases were under treatment the spread and control of the disease would be mastered. Here is where the epidemiologists, social workers and health officers play a large part. They find these unsuspected or hidden cases and bring them in for treatment, and to handle the obstinate cases who will not cooperate.

The private physicians see the largest number of the syphilitics, so he plays an important part, but the doctors alone cannot combat the public but needs help from the county, state and federal depart­ments, and the use of police and legislative power.

Education is important as a large number of cases of syphilis develop because a young person, unaware and ignorant, responds to his sexual impulse, with no knowledge of the dangers he is submit­ting himself to. This is a great error on the part of the parents, teachers, school and church, the state and government. In recent years educational measures are better than before and more and better information is being taught to the people.
The cost of syphilotherapy should be in accord with the ability of the patient to pay for the treatments. The course of treatments are long and continued if there is to be a cure and this necessitates payments over a long period of time. If the patient cannot afford the treatments he discontinues them and does not have his disease cured. So the private physician should charge according to the patient's status and his employment.

The venereal disease clinics are of very great benefit, as large numbers of patients may be cared for at very little expense to the patient and to the organization in charge of the clinic. As yet there are probably not enough clinics or other means of caring for the large number of syphilitics.

The social service worker and the epidemiologists are important for locating the contacts and sources and discovering hidden cases which may be the focus of spread for the disease in a community.

When all the phases of the relationship of syphilis and society are considered, it is evident that it is a major public health problem. It should be handled as such by the various health departments and vigorous measures should be employed to control the disease as it should be possible. All the factors of the disease are known and nothing to hinder the control of the disease except the ignorance and the unwillingness of the public to treat the disease as a major health problem.
The largest handicap in the control of the disease is the public. The solution of that problem is by extensive, concise and adequate information, concerning the disease and the impression of the public to the importance of syphilis to the public welfare.
# Bibliography

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abraham, J. J.</td>
<td>Comments on Syphilis in Women</td>
<td>British Medical Journal, 28: 121-124, 1928</td>
</tr>
<tr>
<td>3</td>
<td>Brown, E. G.</td>
<td>A Study of Veneral Disease in Twenty-two Kansas Counties</td>
<td>Veneral Disease Information IX:185- 1928</td>
</tr>
<tr>
<td>6</td>
<td>Clarke, T. and Usilton, L.</td>
<td>Trend of Cases of Syphilis under Treatment or Observation in the United States.</td>
<td>Southern Medical Journal, 26: 722-729, 1933</td>
</tr>
<tr>
<td>7</td>
<td>Clarke, W.</td>
<td>Prevention and Control of Syphilis in Large Industries.</td>
<td>Journal Social Hygiene 18: 481-491, 1932</td>
</tr>
<tr>
<td>8</td>
<td>Clarke, W.</td>
<td>Some Practical Problems in the Control of Syphilis.</td>
<td>American Journal of Syphilis, January 1933</td>
</tr>
<tr>
<td>10</td>
<td>Cumston, C. G.</td>
<td>Did Syphilis Exist in Antiquity</td>
<td>Medical Journal and Record 125; 269, 1927</td>
</tr>
<tr>
<td>11</td>
<td>Cooper, C. L.</td>
<td>Activities of the Kansas City Health Department in Relation to Social Hygiene</td>
<td>Journal Social Hygiene 18: 150-157, 1932</td>
</tr>
<tr>
<td></td>
<td>Authors</td>
<td>Title</td>
<td>Source</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>12.</td>
<td>Davis, M. M.</td>
<td>Ability of Patients to Pay for the Treatment of Syphilis</td>
<td>Journal Social Hygiene 18: 373, 1932</td>
</tr>
<tr>
<td>16.</td>
<td>Ibid</td>
<td>Page 264</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Hancock, J.</td>
<td>Veneral Disease Control an essential Activity of a County Health Officer</td>
<td>Southern Medical Journal 23: 763-766, 1930</td>
</tr>
<tr>
<td>25.</td>
<td>Kibbey, C. H.</td>
<td>Should the Treatment of Syphilis be Included under the Medical Benefits Arrangement of Industries</td>
<td>Journal Social Hygiene 18: 492-499, Dec 1932</td>
</tr>
<tr>
<td>No.</td>
<td>Author</td>
<td>Title</td>
<td>Source</td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>27.</td>
<td>Levy, D. M.</td>
<td>Is Syphilis a European Disease or Has It been Introduced from Outside.</td>
<td>Urological and Cutaneous Review 35: 205-209, 1931</td>
</tr>
<tr>
<td>28.</td>
<td>Lewis, R.</td>
<td>Contribution of Social Service to the Medical Control of Veneral Disease</td>
<td>Journal Social Hygiene 16: 272-278, 1930</td>
</tr>
<tr>
<td>32.</td>
<td>Miller, J. L.</td>
<td>History of Syphilis.</td>
<td>Annuals of Medical History N.S. 2;349, 1930</td>
</tr>
<tr>
<td>No.</td>
<td>Author(s)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>Pusey, W. A.</td>
<td>History and Epidemiology of Syphilis. Page 5 Springfield, Thomas, 1933</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>Ibid</td>
<td>Page 6</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>Ibid</td>
<td>Page 8</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>Ibid</td>
<td>Page 8</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>Ibid</td>
<td>Page 10</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>Pusey, W. A.</td>
<td>History and Epidemiology of Syphilis. Page 13, Springfield, Thomas, 1933</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>Ibid</td>
<td>Page 13</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>Ibid</td>
<td>Page 23</td>
<td></td>
</tr>
</tbody>
</table>

G. Elliot Smith, Introduction to Bryan's Ebers Papyrus, XXXVII, 1930
<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title</th>
<th>Journal/Conference</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52.</td>
<td>Sckwers, H.</td>
<td>Syphilis Statistics as to the Cause of Death.</td>
<td>Urologic and Cutaneous Review 36:</td>
<td>264-271, Apr '32</td>
</tr>
<tr>
<td>54.</td>
<td>Snow, W. F.</td>
<td>Relations of Police and Health Officials to the Problem of Prostitution and Veneral Disease</td>
<td>Journal Social Hygiene, 18:</td>
<td>340-344, 1932</td>
</tr>
<tr>
<td>60.</td>
<td>Wenger, O. C.</td>
<td>Public Health Aspects of Veneral Disease</td>
<td>New Orleans Medical and Surgical Journal 82:</td>
<td>164-172, 1930</td>
</tr>
</tbody>
</table>
63. Vaughn, H. F.  
   Municipal Control of Veneral Disease  
   Journal Social Hygiene, 14: 539-544, 1928

64. Williams, H. U.  
   The Origin and Antiquity of Syphilis from Diseased Bones.  