toms of epilepsy, those of athetosis and chorea were present. His anatomic study of the brain lesions led him to believe the walls of the cysts were, in part, formed by the vessels by which embolism occurred.

In other parts of the body either the ova or worms have been found in the liver, orbital cavity, lower eyelids, scrotum, mesentery, diaphragm, omentum and in the contents of the intestine.

Thirty-one of the ova were measured by Dr. E. R. LeCount of Rush Medical College, Chicago, care being taken to select such as were yet unbroken.⁷ The sizes (see accompanying table) were found to correspond fairly well with the measurements given by most authorities, particularly those of Katsurada.

ILLEGITIMACY AN ECONOMIC PROBLEM.

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"To such grievances as society can not readily cure, it usually forbids utterance on pain of its scorn; this scorn being only a sort of tinselled cloak to its deformed weakness."—Curren Bell, quoted by Shirley.

"The duty of Christian society is to find its work and to do it."—Carlyle.

"Society is organic; that is to say, it is like an organism, in that it is composed of interdependent parts performing functions essential to the life of the whole."¹ The conservation of the race when economically considered, begins with the personal unit, which has both known and unknown values. The unknown unit, plus environment and heredity, represents a known quantity, which becomes a factor in the product of society. Environment and heredity are always subject to the qualifications of "accidentals," which may be either voluntary or involuntary.

"Clear knowledge is confused when we can not distinguish the parts and qualities of the thing known, and can only recognize it as a whole."² Thus it follows that it is the "accidentals" which are the confusing factors in our political science. "The life of society may be conveniently divided into eight parts, called life-spheres, viz.: (1) language, (2) art, (3) science and education, (4) family life, (5) social life in the narrower sense, that is, the intercourse of friends and associates; (6) religious life, (7) political life, (8) economic life."²

The problem of illegitimacy has a vital position in six of the eight spheres. The personal unit may or may not be privileged a volitional environment; a specific example of the first would be that of the child which chooses a new home with foster parents and a changed society life before his sexual education begins. The resultant changes will be commensurate with the fixation processes of the environment, and the contrast of the two possibilities will be less or greater as the heredity is paralleled or opposed. Add to this the complement of accidentals, which is subject to the same law as heredity.

The example of denied volitional environment will, as a rule, trend toward a phase of life having the least resistance, which has, in most instances, been made by heredity. The possibility of accidentals that parallel the hereditary taints is greatly increased.

Heredity may be either primary or secondary to environment. If primary, then it follows that the heredity had its beginning in the class of accidentals. To exemplify, it is sufficient to instance the accidentals which occur in a line without tainted chastity when amatory passion is causative of procreation out of wedlock.

The certainty of heredity in its primary form, causing an environment for the succeeding generation, is well established, and "it is a general biologic law that the lower the position of an animal in the scale of being, the greater its capacity for the reproduction of its kind."³ "Hereditary tainture existing in an environment of its kind, is procreated through succeeding generations in the case of bastardy to an astonishing degree," as is graphically shown in the tables of Spitzga⁴ and of Dugdale.⁵

The term "accidentals" is here used advisedly and for convenience, there being no English word to distinguish—in contrast to the woman who professionally sells herself—the one who lapses through imprudence, ignorance or passion, and afterward recovers and leads a reputable life. To this class is assigned all women of good heredity, good environment and heretofore unquestioned chastity, who yielded to temptation from causes that were immediate and seemingly insuperable.

Illegitimacy in its generic sense is an inadequate term, referring specifically to the state of being born out of lawful wedlock. In this paper the term is used to designate a vice, in which is the implication of a child, a mother, a father, the relatives, friends and community. It is the purpose of social economics to apply principles to problems connected with the growth and well-being of organized society.

It is the intent of this study to submit statistics and other material which can be used for inductive and deductive reasoning toward the formulation of applied principles for a subject which can be said to have substantially a very meager literature and comparatively few investigators. The difficulties that confront the student of illegitimacy are evident to all who have given the subject but little attention.

The general rules⁶ of method in composing any discourse require, first, that nothing should be wanting or redundant; second, that the separate parts should agree with each other; third, that nothing should be treated unless it is suitable to the subject or purpose; fourth, that the separate parts should be connected by suitable transitions.

It is impossible to exclude the evidence of statistics in a scientific study of illegitimacy, and it is impossible to include them for all geographical divisions. There are in the United States 53 states and territories (including the Hawaiian Islands and Alaska). Of this number, 39 have state boards of health. Letters of inquiry for statistics relative to illegitimate births were sent to every secretary. Replies were received from 25 of the 39; 19 replied that there were no statistics taken. Many do not have any record of births, while some do not keep even death records.

Six states—Connecticut, Minnesota, Rhode Island, North Dakota, Indiana and Michigan—have records. In every instance the figures were affirmed by the secretaries to be unreliable, therefore of little value excepting

7. The stage micrometer employed (Bezu, Hauser et Cie, Paris) contains 100 lines to one-fifth of a millimeter.

* Read before the Wayne County Medical Society, Detroit.

1. Ely: *Political Economy*, pp. 5-6.

2. Leibnitz: *Jevons' Lessons in Logic*, p. 55.

3. McKim: *Heredity and Human Progress*, p. 120.

4. Spitzga: *The Legal Disabilities of the Natural Child, Alienist and Neurologist*, October, 1899.

5. Dugdale: Table 5, *The Jukes*, p. 27.

6. Jevons' *Logic*, p. 202.

for yearly comparisons of state averages. The secretary of state for Michigan, Hon. Fred M. Warner, estimates that probably only about two-thirds of the total number of actual births are being returned. In Michigan, during 1900, only 322 illegitimate births were recorded, the total of all births being 43,699. I was able to collect with little effort from seven sources 466 illegitimate births for 1903 in the city of Detroit.

Eight letters were sent to the registrars general of provinces in the Dominion of Canada, and six replies were received; Ontario being the only province that kept records.

I am indebted, as are all who find interest in the statistics submitted below, to the deputy registrar general of Ontario, and the adequate system of record taking that prevails in this province.

TABLE I.

Total of all births for 1902.....	47,796
Total of illegitimate births for 1902.....	819
Total of illegitimate births, male, for 1902.....	418
Total of illegitimate births, females, for 1902.....	401
Ratio of illegitimate births per 1,000 of all births.....	17.1
Ratio of illegitimate births per 1,000 of all births in 14 cities.....	50.9
Ratio of illegitimate births per 1,000 of all births in country alone.....	13

TABLE II.

The four counties having the highest illegitimate birth rate compared, showing the city and the country ratios:	
York County—	
Country ratio.....	23.9 to 1,000
City of Toronto.....	53.5 to 1,000
Carleton County—	
Country ratio.....	6.1 to 1,000
City of Ottawa.....	104.7 to 1,000
Middlesex County—	
Country ratio.....	6.5 to 1,000
City of London.....	50.7 to 1,000
Frontenac County—	
Country ratio.....	10.9 to 1,000
City of Kingston.....	59.4 to 1,000

TABLE III.

A comparison of the illegitimate birth rates, cities in England, Ontario and Scotland:	
London, England, in 1889.....	38.0 per 1,000
Birmingham, England, in 1889.....	45.0 per 1,000
Liverpool, England, in 1889.....	58.0 per 1,000
London, Ontario, in 1902.....	50.7 per 1,000
Toronto, Ontario, in 1902.....	53.5 per 1,000
Kingston, Ontario, in 1902.....	59.4 per 1,000
Ottawa, Ontario, in 1902.....	104.7 per 1,000
Glasgow, Scotland in 1887.....	83.0 per 1,000
Edinburgh, Scotland in 1887.....	85.0 per 1,000
Dundee, Scotland, in 1887.....	104.0 per 1,000
Aberdeen, Scotland, in 1887.....	106.0 per 1,000

The second rule of method is observed in deduction only, and the remaining rules are observed as closely as is consistent with the peculiar nature of the subject.

The economic problem before the practitioner of medicine, philanthropic worker and sociologist is that of prevention and cure of this macula of unchastity. For the purpose of securing unbiased premises, available literature was consulted, and thirty letters were addressed to experienced workers in widely distributed parts of the country, asking for answers to the following questions. The references and replies, as far as possible, are used, and credit given for the same in the subjoined bibliography:

1. What do you consider the chief causative factors of illegitimacy?
2. What practical preventative measures would you suggest for illegitimacy?
3. In the treatment of illegitimacy as a sociologic evil, would you advise the utmost personal secrecy of the individuals involved?
4. What is the best care of the bastard child for the economy of society, considering first the child, second the mother, third the father, fourth the relatives, friends and local community?
5. Is the lying-in hospital that extends care especially to illegitimate mothers a means of encouragement for the crime? (b) Are such institutions prophylactic against homicide, infanticide and suicide?

6. To what extent can the physician act as a safeguard to society in cases of illegitimacy?

7. In your experience, what percentage of illegitimate mothers are restored to their former position in society? (b) And what percentage go on to greater degradation?

The chief causative factors of illegitimacy are:

1. Insufficient instruction in the phenomena of sexual life, particularly of girls.^{7 8 9 10 11 12}
2. "Incontinence on the part of the male, combined with the passive submission of the woman," with mutual passion prevailing.^{13 7 14}
3. Faulty guardianship.^{8 10 14}
4. Seduction under promise of marriage.¹⁵
5. "Lack of means to establish a home" and other impediments to marriage.¹¹
6. The general servility of women and aversion to marriage on the part of males, and a prevailing notion that hard work is disgraceful and that good clothes are a necessity.

7. The remoter causes of heredity and environment have been proven to be important considerations.^{16 17 18}

8. *Conclusion*.—Leffingwell¹⁶ has tersely summarized the causes in the following: "Illegitimacy is a phase of social phenomena produced by conjoint action of several causes. Its variance in the different localities depends on the force and number of the factors there present."

Pertinent to the subject are the words of Shakespeare: "Find out the cause of this effect, or rather say the cause of this defect. For this effect defective comes by cause."¹⁹

The foregoing enumeration of causes alone suggest inferential preventative measures, which are tersely expressed by Professor C. R. Henderson²⁰ as "all the positive educational, moral, religious agencies which raise ideals, teach young girls their nature, dangers and duties, and give them a rational way of spending their leisure." To this must be added "early marriage" for the passionate.^{21 22 15}

Leffingwell²³ says: "The influence of religion is one of the most powerful agencies against unchastity," and Dr. Howard A. Kelly affirms that the "Christian standard is the solution of the whole problem" of unchastity, as is expressed in the quotation: "Mortify, therefore, your members which are on the earth; fornication, uncleanness, inordinate affection, evil concupiscence and covetousness, which is idolatry, for which things' sake the wrath of God cometh on the children of disobedience."

All these excellent preventative measures must fail, and do fail, as statistics prove, for want of direct and specific application in much the same way as the physician does who prescribes water to stop hemorrhage, without informing the ignorant regarding the necessary tem-

7. Dr. Joseph B. DeLee, Chicago, private communication.
8. Hastings H. Hart, LL.D., Chicago, private communication.
9. Dr. Chas. H. Bushnell, Chicago, private communication.
10. Adjutant E. Bailey, Los Angeles, Cal., private communication.
11. Dr. W. P. Manton, Detroit, private communication.
12. Dr. Denslow Lewis, Chicago: Limitation of the Venereal Diseases. *Medicolegal Jour.*, June, 1903.
13. Dr. J. J. Mulheron, Detroit, private communication.
14. Dr. Charles Pike, Philadelphia, private communication.
15. Mrs. H. C. Sterling, Detroit, private communication.
16. Leffingwell: *Illegitimacy*, pp. 64-85.
17. Dugdale: *The Jukes*.
18. Ernest Bicknell, *Proceedings of National Conference of Charity*, 1896, p. 223.
19. *Hamlet*, Act. 2, Section 2.
20. Prof. C. R. Henderson, University of Chicago, private communication.
21. Mayo Smith: *Statistics and Sociology*, p. 81.
22. Dr. J. H. Carstens, Detroit, private communication.
23. Leffingwell: *Illegitimacy*, conclusion 7, p. 86.

perature, mode of application, etc., or the text-book of medicine that dismisses the treatment of a disease after stating that opium is indicated. The merest tyro in medicine or in social economy knows the value of the remedies in a general way. But this is probably parallel knowledge of that possessed by the man who says—I know opium relieves pain.

Is it not enough to say to the boy or girl—here is the moral law, hear it, read it, obey it, for it is the best advice in all phases of your life? The sexual nature must be plainly outlined by personal interview and confidences secured. Now is the time when profoundest wisdom and most careful judgment is demanded. The prophylactic suggestions must be given with the utmost care, and control taught through the specific means which is most directly applicable.

The question of utmost personal secrecy of the individuals involved admits of discussion. The answers received show that 75 per cent. favor secrecy. The following are among the reasons assigned: (a) Secrecy at this time is dealing with the fruits and not the root of the evil.⁷ (b) Publicity causes loss of self-respect, and thus removes the chief bar to prostitution. It also serves to advertise the woman before men as susceptible material for extended liberties.¹⁵ (c) These unfortunates have no chance in life with public opinion against them, for the disposition of society is relentless and unforgiving. (d) The return to society is made a personal responsibility with the mother when her secrets are preserved.¹⁰ (e) The bastard is made to wear a lifetime label, which has the weight of personal guilt, and friends to whom not even hereditary implication can be imputed are disgraced, and "Good name, in man and woman . . . is the immediate jewel of their souls."²⁴ (f) Publicity is frequently the most active goad to the acts of abortion, suicide and infanticide. It is said²⁵ that "in order to lessen the frequency of abortion and remove some of its temptations, regulations prevail in some of the large lying-in hospitals of Germany, whereby each patient is known only by a number given her on entering, a duplicate of which is written on a sealed envelope in which she has inclosed her name, the address of friends, or any item she may choose. This is returned to her unopened on her departure from the hospital without mishap. The child is taken with her, or may remain in a ward of the state at her option."

Among the reasons given for publicity are the following: (a) The fear of publicity is a wholesome safeguard as far as the young man is concerned. The young woman should tell her parents, if they are people of any character, for the reason that if she does not do that she must lie from first to last, and you can not build character on a lie.⁸ (b) Evils thrive in the dark.¹⁴ The arguments for and against publicity are significantly strong, and it is evident that neither absolute secrecy, as is practiced in some of the German hospitals, nor the full publicity which is given the legitimate birth, can be best for all concerned. The following conclusions are drawn: The question of secrecy should be subservient, first, to the best interests of the child. It is the one most wronged, and should receive every advantage of all possible reparation. It is a human soul, and must outweigh all other results of the illicit act, such as the personal disgrace and the insult and injury to society. To society the mother is a unit of depreciated

values, and is thereby the second most important result of illegitimacy. The best care of the child and mother is the best care for every phase of the problem.

In the event, then, of publicity serving the means of justice for child and mother by compelling the father to do his duty, whatever this may be, under the circumstances, secrecy would here be an injustice. The laws of Illinois²⁶ provide that the father may be compelled, if able, to make provision up to the sum of \$550.

When a woman's parents are deceased or are individuals without character, or when it can be learned that they would cast off their erring child, and when the father of the child is a worthless wretch, absolute secrecy should be imperative. The resident of the rural district, town or small city will require secrecy more than the resident of the large city.

I believe most emphatically that the causes of illegitimacy should be published widely, and all possible emphasis placed thereon; but in the great majority of instances the results should be kept a profound secret.

The best care of the illegitimate child is that by its parents, providing they become man and wife. If practicable, every just means should be used to bring about this union. Of the answers received, 94.3 per cent. advise adoption into childless homes in from one to twelve months after birth; 75 per cent. urge adoption when the child is about one month old. Prof. C. R. Henderson of Chicago University²⁰ forcibly says: "Foundling asylums, baby farms and agencies which take babies from their mother's breast, and ask no questions, are murderers wholesale." This statement may seem unwarranted and altogether too radical, but on examination of certain records a mortality of 98 per cent. was shown. Leffingwell²⁷ affirms that in civilized England illegitimate bastard children are more than four times as liable to "accidents" as their legitimate kindred, and the same writer quotes the registrar general, who pointed out that during the first year of life the mortality of legitimate children was about 205 per 1,000, while the illegitimate rate was 418 per 1,000.

A most interesting field of investigation is suggested to me, viz., that of the milk supply from the breasts of illegitimate mothers. The following tentative theories are advanced on evidence thus far examined. The lacteal secretion of the illegitimate mother is markedly uncertain. The quantity is lessened and the quality impoverished. A number were found to have almost total cessation of secretion before the first three months were past. The supposition advanced is that involuntary nursing is a leading cause, supplemented by the disturbed mental tranquility. It is observed that absence of the breast during the nursing period in this class of mothers is almost unknown. If a tentative conclusion can be made and proved, it will show that the illegitimate mother is incapable, physically, in the majority of instances. When there is added to this financial and social difficulties, the situation is well-nigh impossible. There is also a great probability that the illegitimate child, when old enough to be taunted about his disgraceful birth, will promptly despise his mother. The continuance of the illegitimate child in an environment parallel to its heredity is usually a grievous error, as shown by Dugdale²⁸ in his study of the Jukes. Of 535 children born, 106 were illegitimate, a ratio of 235 per 1,000. The members of the family that changed their

24. Shakespeare: *Othello*, Act. 3, Section 3.

25. W. M. Capp, M.D.: *Medical and Surgical Reporter*, Oct. 11, 1890.

26. Hastings H. Hart: *The Physician and the Illegitimate Child*, Illinois S. M. A., 1902.

27. Leffingwell: *Illegitimacy*, pp. 70 and 73.

28. Dugdale: *The Jukes*, p. 26.

environment at a sufficiently early period were able in most instances to amend hereditary habits.

The conclusion is drawn that the best care of such a child is adoption within one year, or better, one to three months, into a childless family, which has been investigated by a government agent, and by a responsible representative of the child.

The care that is best for the child is, as a rule, best for the mother, the father, relatives, friends and community. The early adoption of the child affords the mother every opportunity for restoration to her former place in society, providing secrecy has been maintained. She is thus able to obtain opportunities for marriage that would be impossible excepting with the lowest of men, were the sign of her fall with her. I have a record of eleven women, nine of whom are living in Detroit and two in the country. All of these are honorable wives and good mothers. All but one informed the prospective husband of her former misfortune, and in each case the man expressed himself as glad that the woman did not deceive. The one woman who did not confide her secret is in great fear of it being revealed. It is very true in this application that "hope deferred maketh the heart sick." If a woman in the sorest trial of her life can entertain no hope for her future, the liability to greater degradation is very certain.

Sanger,²⁹ in his "History of Prostitution," says that 57 of every 100 children born by women who are now prostitutes, were fruit of promiscuous intercourse, and that one-half of the prostitutes of New York City have given birth to children, and more than one-half of these are illegitimate.

The committee of the New York State Senate,²⁹ appointed to investigate prostitution, reported in 1892 that there were 50,000 prostitutes in New York City. Of this number some 12,500 had given birth to illegitimate children. These facts and figures indicate most pathetically the inefficiency of the method used by society for the care and restoration of its unfortunate illegitimates.

It is a frequently heard accusation that lying-in hospitals encourage crime. If such institutions are agencies for houses of prostitution, or if the management is by unprincipled and immoral individuals, the reputation is justly given. But the idea that honestly managed lying-in hospitals are causative of this evil is preposterous. It is just as logical to say the physician who cares for an illegitimate mother during her confinement is encouraging the evil by his professional care of its result, not of its cause.

•Dr. Joseph B. De Lee⁷ says the argument is ridiculous, and asks the question, Does the general surgical hospital increase the number of street brawls with cracked heads?

The contemplation of a child, much less that of a hospital, never enters the minds of the child's parents at the time of their fall. It is always an afterthought.

It is one of the highest privileges of the lying-in hospital to be the means of prevention for infanticide, suicide and homicide. An average of 50 per cent. of all applicants solicit abortion or have attempted the same.¹⁵ The physician, more than any other public servant, is the guardian of the sexual morals of the community.²⁶

Each physician should consider it his privilege and duty to carefully study the social economics of illegitimacy, so that he can act intelligently in giving advice that is protective to life and society.

The percentage of restorations will depend to a large degree on the class of girls. Dr. Charles Pike¹⁴ and Adjutant E. Bailey¹⁰ estimate that 90 per cent. of all cases where it is a first offense are restored under proper treatment, while about 5 per cent. pass on to a greater degradation.

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ENORMOUS MIXED TUMOR OF THE PAROTID REGION

REACHING TO THE CLAVICLE AND WEIGHING ABOUT SEVEN POUNDS; OPERATION; RECOVERY.*

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The Patient.—E. M. B., aged 65, was admitted to the Jefferson Medical College Hospital, Jan. 2, 1904, at the request of Dr. H. M. Righter. Height 5.7 feet, present weight 152 pounds weight in 1890, 250 pounds.

History.—His father died at 49 of "dropsy of the brain"; his mother at 56 from pulmonary tuberculosis. One sister also died of the same disease and another after some gynecologic operation; one brother died from accident; one sister is living and well. Tuberculosis exists both in his father's and in his mother's families, but he does not know the precise individuals who have suffered from it. He is married and has five children, all of whom are living. He had varioloid when he was 22 years old. He has suffered from hemorrhoids and from neuralgia of the face. He was discharged from the Army in 1863 on account of "dropsy of the kidney." He drinks beer moderately; smokes a pipe almost constantly.

Development of the Tumor.—In November 1880, when shaving, he noticed a small lump in the right parotid region. It did not cause him any pain, nor was it tender at first. By 1883 the tumor was large enough to attract the attention of others. By 1892 it had grown to the size of a large walnut. At this time it was manipulated considerably by a physician, and from this he dates its rapid growth. He states that it has doubled in size during the last two years; has never noticed any effect on the flow of saliva. On Dec. 7, 1903, at the inferior border, the tumor opened and there was a forcible discharge of a fluid containing blood. He states that it broke with such force as to cause a hissing sound at first. About two pints of fluid escaped. For two years he has not left his house on account of the annoyance he experiences from everybody's looking at him.

Examination.—On admission there is noticed on the right side of the face and neck an irregular nodular tumor (Figs. 1 and 2) starting just in front of the ear, passing over the lower jaw, under the chin, and extending about 5 cm. to the left of the median line. It extends a little below the level of the clavicle and passes up the back of the neck not far from the median line. The circumference of the tumor horizontally is 63 cm. and vertically 67 cm. The horizontal diameter is 21 cm. and the vertical diameter 27 cm. The present size of the tumor, when the photographs were taken, is markedly less than it was before it broke.

The tumor does not seem to be deeply attached to the larynx or to any of the bones in its neighborhood, the jaw, the mastoid, or the transverse processes of the vertebrae. It is most firmly attached in the parotid region, but below this it can be swung through a considerable arc in all directions. The skin is movable over the tumor; its blood vessels are dilated, and its surface is rough, and at points ulcerated. At the lower border is an opening about the size of a lead pencil. Considerable fluid discharge constantly escapes from this opening. The fluid is brownish yellow, thin and watery. The tumor is composed of nodular masses of greater or less size, many of the larger ones have smaller nodules arising from them. They are elastic, yet firm. Portions of the tumor are evidently cystic; others

29. Sanger: History of Prostitution, p. 676 and addenda.

* Read before the College of Physicians of Philadelphia.