A STUDY OF THE INFANT
AND
MATERNAL MORTALITY
IN
RICHMOND, VIRGINIA.

BY

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Submitted in partial fulfillment of the requirements of the College of William and Mary for the degree of Master of Science. 1931.
INTRODUCTION

STATEMENT OF PROBLEM.

The Author wishes to express her appreciation to the Graduate Committee, especially to Miss H. Aurelia Gill for helpful suggestions and criticisms and to Dr. W. T. Sanger for his generous and sympathetic cooperation in making the Medical College of Virginia facilities available.

Furthermore, the possibility of this reduction seems practicable when we consider comparatively the infant and maternal mortality rates of Richmond, Virginia, and other cities in the United States, of approximately the same population. For example, in 1929, 

INTRODUCTION

STATEMENT OF PROBLEM.

The special problem to be considered in this paper is a detailed investigation of Richmond, Virginia's, infant and maternal mortality for December 1930, January and February, 1931. In spite of its being a limited, seasonal study, it should, as stated by Dr. S. J. Crumbine,* focus "public attention upon a matter which is vital to the future and wellbeing of our country and reveal general trends that may be indicative of methods to be followed for their reduction."

The fact that these deaths represented in 1929, in Richmond, Virginia, 11.1% ** of all deaths during that year, shows the significance of such a reduction. Furthermore the possibility of this reduction seems practical when we consider comparatively the infant and maternal mortality rates of Richmond, Virginia, and nine other cities in the United States, of approximately the same population. For example, in 1929,

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Richmond rated second to the highest in both of these rates. * They were 81 and 9.7 respectively. ** Atlanta, Georgia, had the highest infant mortality rate; Dayton, Ohio, had the highest maternal mortality rate. It was thought best to study these rates of Richmond, Virginia, individually with the hope of ultimately finding factors common to both. Emphasis is placed on the social and civic conditions with which in some measure, the city's infant and maternal deaths may have been connected.

The term infant mortality rate is employed to designate the number of deaths of infants under one year of age, per one thousand live births. Maternal mortality rates is the number of deaths of women from puerperal causes per one thousand live births.

Of course, it must be remembered that due to the many things involved in such a study as this, at best the only hope is to come to a fair degree of accuracy concerning general trends.

** Ibid.
TECHNIQUE OF MATERIALS USED.

The materials used in investigating the infant mortality consisted of data collected from field sources; namely, the vital statistical records of the Richmond Department of Public Welfare, the prenatal and postnatal files of the Instructing Visiting Nursing Association, the files of the prenatal unit of the Medical College of Virginia Dispensary, files of Venable Street Clinic, and the files of the South Richmond Prenatal Clinic.

From the vital statistical records of the Richmond Department of Public Welfare, information was copied from 78 death certificates, and from the corresponding birth certificates. These certificates represent all infants under one year who died during the period of the study. The accuracy of the City's statistics concerning infant deaths depends upon the extent to which the births and deaths of babies are reported. Since Richmond, Virginia, is included in the Birth and Death Registration Area #, these may be considered sufficiently accurate for purposes of study. These comprise those areas in which 90% of all births and deaths are completely recorded.

The information of an economic nature which is available from the birth and death certificates is limited to the mother and father's occupations, the place of abode, and the number of children in the family. From these, inferences, can be drawn as to their standards of living.

To supplement these vital statistics of the Richmond Department of Public Welfare, the files of the prenatal clinics, previously listed, were examined to determine the number of the dead infants, who received prenatal and postnatal treatment from these clinics. There was not known to us any method by which the amount of prenatal and postnatal care administered by private physicians could be checked.

The materials used for the investigation of that portion of this study dealing with maternal mortality consisted chiefly, of field sources identical with those described previously for the infant mortality study.

The field sources used for that phase of this study which seeks to emphasize the social and civic conditions with which in some measure Richmond's infant and maternal deaths may be connected are the Memorial Hospital for White patients, and the St. Philip's Hospital for colored patients. By informal, bedside interviews, the following questionnaire was presented to a hundred women who were treated in the maternity
wards of these institutions during the period of this study, December, 1930, - March, 1931.

1. Name.
2. Age.
3. Address.
4. Number of Years resident of Richmond.
5. Number of Children.
6. How far did you go in School?
7. Did you receive any prenatal education in your home, at school, or elsewhere?
8. What month did you begin having prenatal care?
9. If you attended a clinic, which one did you attend and who told you about it?
   (a) Did they give you any pamphlets?
10. Did this prenatal care help you?
11. Did you have prenatal care for the other children?
12. Do you prefer having your baby delivered at home or at the hospital?
13. Have you ever heard of the Instructing Visiting Nursing Association of the Medical College of Virginia Dispensary?
   (a) Have you ever used either?
15. Did this baby live?
16. What is your husband's occupation and your former occupation?

**HISTORY OF THE MOVEMENT.**

The movement for the reduction of infant mortality was recognized in the United States at the beginning of the Twentieth Century. The first national statistics for this mortality were published by the Bureau of Census, in 1913, under the caption "Mortality Statistics for 1910."
This statistical study revealed that the majority of causes for deaths under one year lay in the prenatal period and that measures for their prevention must be concentrated on the mother over a considerable period of her pregnancy. By methods born of this revelation, as well as efforts along other channels, the United States was able to reduce its infant mortality rate from 100 in 1915 to 68.1 in 1929. Thus in 1929, one baby out of every 14 live births in the United States died during its first year of life.

Although a city ordinance requiring the reporting of births went into effect in Richmond in 1900, no definite statistics were shown until July 1, 1906, when the Department of Public Welfare was reorganized. In that year it was found that there were 213 infant deaths for every 1,000 live births. Definite work in infant welfare began in 1910 through the work of the Nurses of the Bureau of Public Health. By 1913, the following report was given.*

Number babies under supervision . . . 1,100
Number deaths of supervised infants . . 94
Number deaths of unsupervised infants . 414

In 1914, the nurses' program was to educate the mother in the care of the infant before and after birth, and, in general, to improve living conditions. In 1915, provision was made to supply milk to children whose parents were unable to purchase it.*

In 1917, it became apparent that bad living conditions in the poorer quarters of Richmond was one of the contributing causes of the high rate. This brought a recommendation for an adequate housing law in Richmond. Another project was the Veneable Street Child Welfare Clinic and Milk Station. It was managed by the Bureau of Health and financed by the Federation of Mothers' Clubs. A similar station station was opened at the Zionist Institute.**

Maternity Clinics were open in 1920 at the Instructing Visiting Nursing Association and Veneable Street Clinic.***

In June, 1921, the City Board of Public Health adopted regulations for those practicing midwifery. The following points were required:

1. Taking the course of instruction which was arranged by the health officer.


** Report of Richmond, Virginia, Department of Public Welfare - 1918.

*** Report of Richmond, Virginia, Department of Public Welfare - 1921.
2. Previous practical experience.

3. Oral examinations by the midwife examining board.

More recently efforts have been made through the prenatal and maternity, and the children's clinics throughout the city to reduce these rates.

**CHART I.**

Infant Mortality in Richmond, Virginia, 1907 - 1929.
To summarize briefly, the trend of infant mortality rates in Richmond show a decrease from 1917 to 1929.* In 1907, the rate was 213. Thus, one out of every four live births died during the first year, 1907 - 1929, the colored rate was much higher, raising the average rate considerably. (Chart I).

**Chart II.**

*Annual Report of the Department of Public Welfare in Richmond, Virginia, 1929.*
Chart II from 1915 to 1929 shows that Richmond's rate is consistently much greater than the average rate for the United States registration area, and also shows the general progress of the movement. During this time, Richmond reduced its rate 36% in spite of its comparatively poor showing. (Chart I.)

COMMENTS ON HISTORICAL SOURCES.

Concerning investigations which have sought to analyze and treat as an entity or in any of its phases the infant and maternity mortality of Richmond, only the Public Health reports have been available. These have been briefly summarized in the proceeding historical sketch.

Apparently, no previous study has been made correlating interviews with women in the maternity wards at hospitals and the infant deaths of the same period. This is an attempt to locate the difficulties of carrying out our educational and clinical program, and to define our individual program in Richmond.

Accounts of the maternity mortality as an individual problem are conspicuously missing in the literature available. The explanation of this sparsity probably lies in the recent development of maternity hygiene as a branch of public health.
INVESTIGATIONS.

Many studies have been made on infant mortality by different foundations. Reference will be made to these as they correlate with the specific material in the discussion to follow.

Materials on infant mortality will be presented in the following order:

Status, pathological causes, social aspects, and civic aspects of Richmond's infant mortality rate.

TABLE I.

Comparison of the Infant Mortality from 1926-1928 of all Cities in the United States between 161,372-207,000 Inhabitants.

<table>
<thead>
<tr>
<th>NAME OF CITY</th>
<th>Population 1920</th>
<th>Inhabitants</th>
<th>INFANT MORTALITY RATE-1916-1928a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Census</td>
<td>1920-1921</td>
<td>1922 1923 1924 1925 1926 1927 1928</td>
</tr>
<tr>
<td>Syracuse, N. Y</td>
<td>207,007</td>
<td>103 78</td>
<td>63 63 69 65 63 63 63</td>
</tr>
<tr>
<td>Atlanta, Ga.</td>
<td>206,316</td>
<td>131 104</td>
<td>109 101 111 84 100 94</td>
</tr>
<tr>
<td>Dayton, Ohio</td>
<td>206,225</td>
<td>91 70</td>
<td>72 77 74 71 67 66</td>
</tr>
<tr>
<td>Worcester, Mass.</td>
<td>196,356</td>
<td>94 74</td>
<td>63 75 75 65 63 63 63</td>
</tr>
<tr>
<td>Richmond, Va.</td>
<td>190,455</td>
<td>129 96</td>
<td>99 90 107 80 65 51</td>
</tr>
<tr>
<td>Oklahoma City</td>
<td>182,848</td>
<td>- -</td>
<td>79 - - 74 65 66</td>
</tr>
<tr>
<td>Youngstown, Ohio</td>
<td>176,004</td>
<td>102 90</td>
<td>72 74 85 65 71 72</td>
</tr>
<tr>
<td>Grand Rapids, Mich.</td>
<td>168,254</td>
<td>86 63</td>
<td>55 69 66 68 66 65</td>
</tr>
<tr>
<td>New Haven, Conn.</td>
<td>162,850</td>
<td>84 70</td>
<td>72 65 54 84 57 47</td>
</tr>
<tr>
<td>Hartford, Conn.</td>
<td>161,372</td>
<td>103 76</td>
<td>52 72 75 74 61 68</td>
</tr>
</tbody>
</table>

* American Child Health Association Report, 1929.
INVESTIGATIONS.

I. Analysis of Materials on Infant Mortality in Richmond, Virginia.

The analysis of our materials on infant mortality will be presented in the following order:

Status, pathological causes, social aspects, and civic aspects of Richmond's infant mortality rate.

| TABLE I. |
| Comparison of the Infant Mortality from 1916-1929 of all Cities in the United States between 161,372-207,000 Inhabitants. |

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Syracuse, N.Y</td>
<td>207,007</td>
<td>103 78 69 68 69 58 59 56</td>
</tr>
<tr>
<td>Atlanta, Ga.</td>
<td>200,616</td>
<td>131 104 109 101 111 84 100 94</td>
</tr>
<tr>
<td>Dayton, Ohio.</td>
<td>200,225</td>
<td>91 70 72 57 84 71 67 66</td>
</tr>
<tr>
<td>Worcester, Mass.</td>
<td>196,395</td>
<td>94 74 63 75 75 58 62 59</td>
</tr>
<tr>
<td>Richmond, Va.</td>
<td>182,883</td>
<td>128 96 88 90 107 80 85 81</td>
</tr>
<tr>
<td>Oklahoma City, Oklahoma</td>
<td>182,545</td>
<td>- - 73 - - 74 68 66</td>
</tr>
<tr>
<td>Youngstown, Ohio</td>
<td>170,004</td>
<td>105 80 72 74 85 65 71 72</td>
</tr>
<tr>
<td>Grand Rapids, Mich.</td>
<td>168,234</td>
<td>86 63 53 69 66 53 54 53</td>
</tr>
<tr>
<td>New Haven, Conn.</td>
<td>162,650</td>
<td>84 70 72 66 54 54 57 47</td>
</tr>
<tr>
<td>Hartford, Conn.</td>
<td>161,372</td>
<td>103 76 62 72 73 74 61 68</td>
</tr>
</tbody>
</table>

* American Child Health Association Report, 1929.
The statistics recorded in Table I show Richmond’s comparative rating as to progress made from 1916-1929, in the reduction of infant mortality rates. To illustrate, let us consider her progress comparatively with that of New Haven, Connecticut, and that of Atlanta, Georgia, cities of approximately the same population that represents, respectively, the lowest and the highest infant mortality rates. Richmond has reduced her rate during this period, 23.77% more than New Haven, Connecticut. New Haven’s rate, however, in 1916, was 34% lower than Richmond’s rate. In 1929, Richmond had approximately one death for every 12 living infants in contrast to one death for only every 21 in New Haven; thus we should realize the practicality, possibility and desirability of reducing Richmond’s high rate. The fact that Richmond has had a 21% greater reduction for this period than Atlanta, Georgia, and the fact that Richmond’s rate has decreased more from 1916-1929 than any other city of this group, should be an inspiration towards further reduction. However, her margin of leadership is numerically small. The percentage of decrease ranged from 25% to 36.7%.

The statistics in Table I for 1929 are represented graphically in Chart III, thereby, showing Richmond's status as to infant mortality to be next to the highest for these cities. New Haven, Connecticut, had the lowest infant mortality rate for three cities with a rate of 47.
<table>
<thead>
<tr>
<th>Causes</th>
<th>A</th>
<th>J</th>
<th>F</th>
<th>W</th>
<th>B</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>L</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>78</td>
<td>45</td>
<td>36</td>
<td>72</td>
<td>41</td>
<td>25</td>
<td>13</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Premature</td>
<td>23</td>
<td>13</td>
<td>10</td>
<td>13</td>
<td>17</td>
<td>21</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Broncho-Pneumonia</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Cerebral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Arthropain</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Leber-Pneumonia</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Congenital Heart Disease</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Syphilis</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Birth-Trauma</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gastro-Enteritis</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>T.B. of Meninges</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Undetermined</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Acute                        |    |    |    |    |    |    |    |    |    |    |    |
| Bronchitis                   | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  |
| Instrumental Delir.          | 1  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  |
| Congenital Abnormality Brain | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  |
| Diptheria                    | 1  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  |

| Absence of Gall Bladder      | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  |
| Toxemia                      | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  |
| Diseases of Thyroid Gland    | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  |
| Convulsion                   | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  |

* Tabulated from the birth certificates Dec. 1930 to March 1931 at Richmond, Virginia, Department of Public Welfare.
This rate was 50% lower than Atlanta, Georgia, and 42% lower than Richmond. *

Concerning pathological causes of infant mortality in Richmond, Virginia, it has been previously stated that this study treats only those deaths occurring between December 1930 and March 1931. It is regretted that the time limitation makes this a seasonal study. However, the analysis of the causes and ages of the infant deaths may serve as an indicative of the value of the lack and value of a more conclusive study of this nature.

These causes and ages correlated with sex and care are listed according to months in Table II.

Let us consider those percentages, calculated from statistics recorded in the above Table, which may be deemed significant.

First, 20 or 25.6% were due to respiratory diseases, which include bronchitis, broncho-pneumonia, pneumonia and influenza. Although this is probably due to the season of the study, it is significant that the statistics for the year 1929*** show 49 or 17% of all the deaths for that year due to this cause. It may be indicative of the advisability of employing additional medical social

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workers or nurses to follow-up deliveries in an effort to assure economic and medical attention to prevent or cure such infections.

Second, 5 or 6.3% were due to arthrepsin, another argument for more effective medical social work. This suggests further that the City is in need of a colored worker for this work, as has been employed with success in the tubercular phase of health work in Richmond, Virginia. All of these deaths from arthrepsin occurred in that race.

Third, Chart IV, supplementary of Table II, shows that 32 or 41%, of the deaths were postnatal; thereby indicating the importance of postnatal work.

Fourth, the percentages showing the age incidence are indicative of the period during which medical social post-natal work should be concentrated in order to be the most effective during this season of the year. There were 40, or 51%, of the prenatal deaths occurring before the infant was two weeks old.

Fifth, 23 or 29.5%, of the total deaths were due to premature births, an argument for a more effective administration or prenatal care. This argument appears even more valid with the knowledge that 17 or 73.9% of these died before they had lived one day.
CHART IV.

CAUSES OF INFANT DEATHS IN RICHMOND, VIRGINIA, DECEMBER 1930 - MARCH 1931.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natal and Prenatal Causes</td>
<td>59%</td>
</tr>
<tr>
<td>Respiratory Diseases</td>
<td>26.9%</td>
</tr>
<tr>
<td>Gastro-intestinal Diseases</td>
<td>10.2%</td>
</tr>
<tr>
<td>Epidemic and Communicable Diseases</td>
<td>2.5%</td>
</tr>
<tr>
<td>External and other Diseases</td>
<td>1.3%</td>
</tr>
<tr>
<td>Unknown</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Classification of Children's Bureau, U. S. Dept. of Labor.

To impress the argument for more effective administration of prenatal care, Chart IV supplement Table II from which the percentages of the causes of infant deaths under consideration have been calculated. Thus, 46, or 59%, of the causes were natal and prenatal, which include premature birth, congenital debility, injuries at birth, diseases of early infancy, congenital malformation and syphilis.

In Louisville, Kentucky, from April 1, 1923 to July 1, 1927 of the 113,217 deliveries, two-thirds received prenatal care. Of those who had prenatal care, 7.5 infants died, in contrast to 22.6 without prenatal care. *

That natal and prenatal causes are frequently accompanied by certain significant social or economic conditions is discussed by Robert Woodbury in his pamphlet, "Economic Factors in Infant Mortality." He found that the care given the baby by its mother is "often offset by the families' needs, since a low income frequently must involve, undesirable housing accommodations, an overworked mother, insufficient nourishment for the mother and child, and lack of competent medical advice." **

From a study in Montclair, New Jersey, it was found that infant mortality rate was approximately two and one half times as high among families where the income was less than $12 a week as among families where the income was $23 a week or more.*

In 1915, in Johnstown, Pennsylvania, statistics showed that the infant mortality rose to 225.7 when the father earned less than $521 a year, or ten a week, and fell to 84 when he earned $1,000 or more. **

Although poverty, occupation, number in family and location of home may be accompanying rather than causal factors, their correlation may be significant. It is regretted that this study has no exact information concerning poverty as a factor in Richmond's mortality rate. However, let us first consider the correlation of occupation and infant mortality in Richmond for the period.

This correlation is presented in Table III.

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>NUMBER</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>78</td>
<td>100</td>
</tr>
<tr>
<td>Professional and semi-professional</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Skilled Workmen</td>
<td>23</td>
<td>29.5</td>
</tr>
<tr>
<td>Semi-Skilled Workmen</td>
<td>20</td>
<td>25.5</td>
</tr>
<tr>
<td>Unskilled Workmen</td>
<td>28</td>
<td>35.3</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>6.9</td>
</tr>
</tbody>
</table>

* Infant Mortality - Results of a Study in Montclair, N.J., Pg. 19, U. S. Children's Bureau, Pub. No. 11, Washington, D. C.
In the foregoing table, the same classification was used as employed by the Metropolitan Life Insurance Company. *

This classification includes under semi-skilled workmen, motormen, factory workers, etc., and under skilled workmen, electricians, printers, machinists, etc. It is evident from this table that babies born in the homes of unskilled workers, where earnings are small, face greater hazards than those who have an occupation with greater remuneration. 28, or 35.3%, of the children who died, came from homes of this type of workmen. Likewise the fact that 48 or 61.3% of the fathers were either semi-skilled or unskilled workmen seems to indicate that occupations of low financial gain are, in the majority of cases, at least, an accompanying factor. The small percentage of the professional and semi-professional group, 2 or 2.3%, may be indicative of the success of education and higher living wages.

Whether this correlation affects occupation is merely an indication that more children are born into the homes whose fathers have occupations of lower wage levels, or whether it represents in the last analysis, a higher percentage of deaths, the author is unable to state. This study has not attempted to work out what percent of the births of each occupational group resulted in infant deaths.

* Cost of Medical Care.
No occupational study of this industrial age should consider solely the paternal occupation. For that reason, a study was made of maternal occupations. Only four of the mothers worked. One white mother worked in a tobacco factory. Three of the colored mothers worked, one as a factory hand, and the other two as housemaids. Unlike most studies, the occupations of the mothers is not a large factor associated with these deaths.

Let us consider, secondly, the size of the family as at least an accompanying factor.

**TABLE IV.**

NUMBER OF CHILDREN IN FAMILIES OF INFANT DEATHS IN RICHMOND, Va., Dec. 1930 - March 1931.

<table>
<thead>
<tr>
<th>Number of Children in Family</th>
<th>Number of Families</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>78</td>
<td>100.</td>
</tr>
<tr>
<td>One</td>
<td>30</td>
<td>38.5</td>
</tr>
<tr>
<td>Two</td>
<td>21</td>
<td>27.</td>
</tr>
<tr>
<td>Three</td>
<td>16</td>
<td>21.1</td>
</tr>
<tr>
<td>Four</td>
<td>7</td>
<td>9.</td>
</tr>
<tr>
<td>Five</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Six</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Seven</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Eight</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ten</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Eleven</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Twelve</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Unknown</td>
<td>4</td>
<td>5.</td>
</tr>
</tbody>
</table>

The greatest percent, 38.5, came from families in which the infant, who died, was the only child. 27% had only two children, 14.1% had three, 9% had four and 11.4% ranged between 5 and twelve.

There are other studies showing that there appears to be a relation between infant mortality and the number of children to whom the mother has previously given birth. * The mother of a first child may be often unacquainted with essentials of prenatal care. A later born child profits from the mother's physical maturity and the knowledge and experience she has gained with her previous children. However, in many instances, in large families, these advantages may be counteracted in overwork of the mother, home crowding and poverty. *

Lastly, let us consider the location of the home as, at least, a factor.

Richmond, Virginia, has been divided into six sections: West End, Northside, Central, Church Hill, South Richmond, and Fulton (Map I). The spot map indicates the homes from which the deaths, in this study came. The


greatest number, 28 or 37.1%, of the infants came from the Central District. Most of these lived near Main and Cary Streets, where the houses are small and close together, and the rent is low. Both Fulton and West End had only 2, or 4.35% each, of the deaths. Church Hill had 16 or 21%, which is almost as high as that of Central District. The majority of these lived on 25th, 26th, Veneable and adjoining streets where the housing conditions are poor, and where most of the laboring class live. The Northside had 15 or 19.3% of these deaths. The majority of deaths of the 12.9% in South Richmond, likewise came from the section of that district where the living conditions are poorest.

It should be noted here that with the exception of only three infants, those who died, came from those sections of the city where the poorest families lived.

This study apparently confirms the findings with Dr. Robert Woodbury, who points out that "The influence of economic position is undoubtedly indirect. The study of the chain of causal, on connecting poverty with high infant mortality, 1924, showed that the responsibility of low earnings extended over the excessive mortality associated with housing congestion and with mother's employment both during pregnancy and during her child's first year of life. It showed also that a direct relation existed between lack of means and the kind of care available both for the mother's during pregnancy and confinement, and for the baby during the first year. The analysis suggests, therefore, that lack of care is another intermediate factor."
Such measures as free provision of adequate prenatal and confinement care for mothers and medical supervision over infants through municipal health centers or clinics, if available to all without reference to their economic position, if thoroughly carried out, not only to reduce the infant mortality rate but also to lessen, if not eliminate, its dependence upon economic position. *

II - Analysis of Materials on Maternal Mortality in Richmond, Virginia.

The analysis of our materials on maternal mortality will be presented in the following order:

Status, pathological causes, social aspects, and civic aspects of Richmond's Mortality rate.

To determine Richmond's status, let us consider the ten cities of approximately the same population discussed in the infant mortality study.

CHART V - MATERNAL MORTALITY, 1929.

COMPARATIVE RATES OF TEN CITIES IN UNITED STATES.

Richmond, again rates second to the highest in maternal mortality rates for 1929. Her rate was 9.7. Dayton, Ohio, led with the rate of 11.2.
The basis for this statement is shown graphically in the above chart. While Richmond's rate for 1929 was 13% less than that of Dayton, Ohio. Both of these cities had a rate of 27.8% higher than the average rate of the United States Birth registration area. Hartford, Connecticut, with a rate of 5.8%, represented the lowest maternal mortality rate reached by these ten cities.*

In comparing maternal rates with the other cities, Richmond falls far behind the others, although the latter rate has decreased more than in any other city.* If low rates can be attained in other cities of approximately the same population, there is reason to believe that lower rates can be reached in maternal mortality in Richmond.

The pathological causes of maternal mortality from December 1930 to March 1931 probably presents no basis for scientific conclusions in that these deaths number only six. However, to those especially interested in a seasonal study of maternal deaths, we present the following analysis:

<table>
<thead>
<tr>
<th>CAUSES OF DEATH</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>6</td>
</tr>
<tr>
<td>Extra-uterine Pregnancy</td>
<td>1</td>
</tr>
<tr>
<td>Obstetrical Shock and Toxemia</td>
<td>1</td>
</tr>
<tr>
<td>Toxemia and Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>Eclampsia and Incomplete Abortion</td>
<td>1</td>
</tr>
<tr>
<td>Cesarian and Acute Streptococcus Infection</td>
<td>1</td>
</tr>
<tr>
<td>Abortion and Labor Pneumonia</td>
<td>1</td>
</tr>
</tbody>
</table>

Let us consider one of these causes in detail. For example, we shall imagine a case study of eclampsia:

Mrs. B. has eclampsia. We know this by the following symptoms. Her blood pressure is 200 millimetres and the urine, in addition to showing many and varied casts, contains albumen. There is also found a characteristic, peripheral necrosis of the liver. The first sign of this disease was a convulsion and she has had many and frequent ones since this first one. These convulsions begin with a twitching of her eyelids; the eyes are wide open and staring and the pupils are first contracted and then dilated. The twitching extends to the muscles about the nose and mouth, then to the neck and arms, and so on until the entire body is convulsive. During this, Mrs. B's face is cyanotic and badly distorted with the mouth drawn to one side. She clenches her fists, rolls her head from side to side and tosses violently about the bed. She is totally unconscious and insensible to light. Her head is bent backward, her neck forming a continuous curve with her stiffened, arched back. Another distressing feature is the protruding tongue and the frothy saliva, which is blood stained if the patient is not prevented from biting her tongue by the introduction of some sort of a mouth gag between her teeth. The patient goes into a coma after this. She keeps a weak, rapid pulse together with a high temperature and high blood pressure.
The patient was in the hospital only a short while before she died. Eclampsia is very difficult to cure but it can be prevented by proper and close supervision.

This death could have been prevented by regular visits to the home or clinic visits. Daily urinalysis should have been made. Another control is diet. This should consist of milk, a limited amount of eggs and omission of meats. Daily elimination is also essential.

To show that eclampsia can be prevented the following report was given by the Bellevue Hospital in New York City. In a series of 1200 maternity cases in that institution during 1920, prenatal care was given to 900 women and not one case of eclampsia occurred among them, while among the remaining 300 women who had not been seen during pregnancy, there were ten eclamptics. The Henry Street Settlement reported that there was but one case of eclampsia among 7600 women who were given prenatal care by its nurses in 1920. These figures, contrasted with the average of one case in about every 500 pregnancies, furnish astounding evidence of what can be done through prenatal care in the prevention of this one disease alone.*

Since the number of deaths in this study is not large enough to be significant the causes of 1929 maternal deaths more clearly show the situation in Richmond. Chart VI presents this analysis in figures and percentages.

CHART VI.
CAUSES OF MATERNAL DEATHS IN RICHMOND

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puerperal Septicemia</td>
<td>40%</td>
</tr>
<tr>
<td>Puerperal Albuminuria</td>
<td>20%</td>
</tr>
<tr>
<td>Puerperal Hemorrhage</td>
<td>25.7%</td>
</tr>
<tr>
<td>Accidents of Pregnancy</td>
<td>8.6%</td>
</tr>
<tr>
<td>Other Causes</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

Total: 35

Sources:
Data used:
Mortality Statistics U.S. Census Bureau, 1929.
By dividing these deaths into specific causes, it was found that 14 or 40% were due to puerperal septicemia. This is commonly accepted as preventable.

The 1924 Scottish Departmental Report stated that the idea of preventability is so interwoven with the history of sepsis that the whisper of the word evokes at once the suggestion of failure. The experience of many municipal and private prenatal clinics, notably those of the Detroit Department of Health under the direction of the late Dr. W. E. Welz shows that reduction of puerperal septicemia is a practical possibility. The Detroit Clinics reported a 75% reduction in maternal deaths due to puerperal septicemia, among women they supervised in the clinics. *

Of Richmond’s maternal deaths for 1929, 25.3% were due to puerperal hemorrhage. Puerperal albuminuria caused 20% of the maternal deaths in 1929. It is also generally recognized that these deaths may be reduced by medical supervision during the prenatal period. * Only 8.6% of these deaths were due to accidents of pregnancy. These include hemorrhage, prolonged labor, and malformations and malpositions. These are difficult to prevent. In the United States one-third in 1927 and one-fourth in 1929 were of this class.

---

Dr. Walter E. Welz also felt that if an attempt were made to apply existing knowledge to the means of preventing just puerperal septicemia, and albuminuria and convulsions, maternal deaths could be reduced in the United States to two-thirds of the present number.*

In comparing the pathological causes of Richmond's maternal mortality rate with nine cities selected as previously described, Richmond had second to the highest due to puerperal septicemia. Hartford, Connecticut, had the lowest with 22 deaths for every 1,000 live births due to puerperal septicemia. This was 4.3% lower than Richmond. For deaths from puerperal albuminuria and convulsions, Dayton, Ohio, led with the rate of 3.2, or 4% more than Richmond, whose rate was 1.9. Syracuse, New York, had the low rate of .5 per 1000 live births which indicates that it may be possible to reduce this rate.*

The mortality rates for puerperal hemorrhage ranged from Grand Rapids, Michigan, whose rate was .6 to Yountstown, Ohio, and Richmond, whose rates were 2.5. Accidental of pregnancy ranged from .2 in Hartford, Connecticut, to 2.1 in Oklahoma City, Oklahoma. Since puerperal septicemia, and albuminuria and convulsions cause 61.4% of the maternal deaths in the United States, apparently, the majority of deaths from puerperal causes are due to causes which have been reduced in certain localities, we believe

* Report of Scottish Departmental Committee 1924, p.8
According to U. S. Birth Registration Area.

### TABLE VI.


<table>
<thead>
<tr>
<th>Cities</th>
<th>Puerperal Deaths</th>
<th>Accidental Deaths</th>
<th>Puerperal Hemorrhage</th>
<th>Septicemia</th>
<th>Albuminuria &amp; Other Causes</th>
<th>Convulsions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>4621</td>
<td>495</td>
<td>1080</td>
<td>1984</td>
<td>873</td>
<td>189</td>
</tr>
<tr>
<td>Registration Area</td>
<td>3.8</td>
<td>1.6</td>
<td>3</td>
<td>1.3</td>
<td>.3</td>
<td></td>
</tr>
<tr>
<td>Syracuse, N. 28</td>
<td>5</td>
<td>12</td>
<td>9</td>
<td>11</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>N. Y. R. 6.6</td>
<td>1.2</td>
<td>2.1</td>
<td>2.6</td>
<td>2.5</td>
<td>5.4</td>
<td>.2</td>
</tr>
<tr>
<td>Dayton, N. 31</td>
<td>1</td>
<td>8</td>
<td>19</td>
<td>11</td>
<td>3.2</td>
<td>0</td>
</tr>
<tr>
<td>Ohio R. 11.2</td>
<td>.3</td>
<td>2.3</td>
<td>5.4</td>
<td>3.3</td>
<td>2.7</td>
<td>.4</td>
</tr>
<tr>
<td>Atlanta, N. 49</td>
<td>5</td>
<td>11</td>
<td>17</td>
<td>14</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ga. R. 9.6</td>
<td>1</td>
<td>2.2</td>
<td>3.3</td>
<td>2.7</td>
<td>7.4</td>
<td>2</td>
</tr>
<tr>
<td>Worcester, N. 33</td>
<td>3</td>
<td>7</td>
<td>13</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Mass. R. 8.8</td>
<td>.9</td>
<td>1.9</td>
<td>3.5</td>
<td>2.7</td>
<td>.2</td>
<td>0</td>
</tr>
<tr>
<td>Richmond, N. 35</td>
<td>3</td>
<td>9</td>
<td>14</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Va. R. 9.7</td>
<td>.8</td>
<td>2.5</td>
<td>4.9</td>
<td>1.9</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Oklahoma City, Okla. R. 9.7</td>
<td>6</td>
<td>4</td>
<td>1.4</td>
<td>3.1</td>
<td>2.8</td>
<td>.3</td>
</tr>
<tr>
<td>Youngstown, N. 32</td>
<td>2</td>
<td>9</td>
<td>13</td>
<td>7</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Ohio. R. 8.8</td>
<td>.5</td>
<td>2.5</td>
<td>3.6</td>
<td>1.9</td>
<td>1.9</td>
<td>.5</td>
</tr>
<tr>
<td>Grand Rapids 20</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Mich  N. 5.8</td>
<td>.6</td>
<td>2.6</td>
<td>2.6</td>
<td>1.7</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>New Haven, N. 26</td>
<td>2</td>
<td>8</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Conn. R. 7.7</td>
<td>.6</td>
<td>2.4</td>
<td>2.7</td>
<td>1.8</td>
<td>.3</td>
<td></td>
</tr>
<tr>
<td>Hartford, N. 19</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Conn. R. 4.6</td>
<td>.2</td>
<td>1</td>
<td>2.2</td>
<td>.7</td>
<td>.5</td>
<td></td>
</tr>
</tbody>
</table>

**Key:**
- **N** - Number
- **R** - Rate
that this justifies the assumption that adequate medical supervision would further reduce this rate. Since, in Richmond, in 1929, 60% (Chart VI) of the maternal deaths were due to puerperal septicemia and albuminuria, maternal mortality might be reduced through careful and constant supervision during gestation.

The material available on the economic aspect of Richmond's maternal mortality for December 1930 to March 1931 is conspicuously missing. The certificates from which the information concerning maternal mortality was collected are not supposed to describe the economic aspect of the death unless it be a direct or immediate causal factor of the death. They did contain information as to location. Map I presents the distribution of the maternal mortality in Richmond during this period. 3 or 50% were located in Central District. Of course, it was impossible to interview those women who had previously died from puerperal causes. On the other hand, 100 women using free delivery service at the Memorial and St. Philip's Hospitals were interviewed with the hope of revealing some of the characteristics of those in need of patronizing the Clinic. This study shall be presented next.

Analysis of interviews at the Memorial and St. Philip's Hospitals is given in Table VII.
### TABLE IX.

<table>
<thead>
<tr>
<th>RACE</th>
<th>AGE</th>
<th>EDUCATION</th>
<th>NUMBER OF CHILDREN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15-20</td>
<td>21-35</td>
<td>26-30</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Yrs.</td>
<td>Yrs.</td>
<td>Yrs.</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>34</td>
</tr>
<tr>
<td>White</td>
<td>52</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Colored</td>
<td>48</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

100 Cases were studied, therefore, the number and percentages are the same.

Of the 100 women interviewed at Memorial and Saint Philip's Hospitals, 48% were colored, and 52% white. 34%, the greatest number, were under 21 years of age while
while only 15% were over 30 years of age. 3 of the colored women had never attended school, 24% of both white and colored did not reach the sixth grade, 39% finished from sixth to eighth grades and 33% finished from nine to twelve grades. There was one white college graduate in the group. The fact that 66% did not go beyond the eighth grade gives us an idea as to the background, and a guide to diction, the psychology of an educational program, and the technique of distribution, of literature to encourage prenatal care.

19% had no children, the present child having died either by miscarriage or at birth. The child in the hospital was the first for 37% of the women; 21% had two previous children; 12% had from three to five; and 11% had from six to ten. It is significant that, even though the majority of the women in the hospitals had complications, they had a much lower percentage of infant deaths among the first born than those women in the infant mortality study, where the complications were slight. (Tables VIII and IX).

Except for eleven who came from rural counties near Richmond, these women lived in the different sections of the city. As in the three months mortality study, the highest percentage, in this instance, 37 or 37%, came from the Central District. (Map I) where the standard of living is low. 25% came from Church Hill, 7% from the Northside, 13% from South Richmond, 4% from Fulton, and 4% from the West End. 85% had been living in Richmond sufficiently long to be enrolled in the city
directory. This investigation reveals that districts of the same economic and lower standards of living, namely, Fulton, South Richmond and Church Hill, have a lower percentage of deaths than the Central District. Map I. This apparently indicates that the free hospital facilities now provided are ideally located and that if there be need of increased facilities, these institutions should be enlarged.

An occupational study was likewise made of these 100 women. The figures of this study are presented in Table X.

**TABLE X.**

Occasion of the Women and Their Husbands of those Interviewed at St. Philip's and Memorial Hospitals.

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>Number Total</th>
<th>WHITE</th>
<th>Total</th>
<th>COLORED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M.</td>
<td>F.</td>
<td>M.</td>
<td>F.</td>
</tr>
<tr>
<td>Total</td>
<td>141</td>
<td>85</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td>Professional &amp; Semi-Prof.</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Skilled Workmen</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Semi-Skilled Workmen</td>
<td>13</td>
<td>11</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Unskilled Laborer</td>
<td>40</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Unemployed &amp;</td>
<td>71</td>
<td>54</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>Unknown</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Only 2, or 3.8% of the white women had any occupation at all, while 7.5% of the colored had unemployment, 75% of these being house maids. The seeming discrepancy in the
in the number of women and their husbands and the occupation is accounted for by the large number of mothers who were unmarried. This is especially true of the colored women.

There is a direct parallel between the percentages of classes which are the most frequent users of the hospitals and the percentage of those classes in which our greatest infant mortality rate is found. (Tables VII and X).

Of the husbands of the white women 6% were professional or semi-professional men; 21.2% were skilled workmen; 33.3% semi-skilled workmen; 15% common laborers; 12% were unemployed and 12% of the occupations were not secured. Of the 8 husbands of the colored women, 12.5% were semi-skilled workmen, 62.5% were common laborers; and 25% were unemployed. The highest percentage which was 94.6% was found among the colored in the laboring class, and 40.7% among the white in the semi-skilled group. This information can be used profitably in an educational program, for apparently, it is the wives of the unskilled laborer, semi-skilled and skilled workmen upon whom we need to concentrate the educational program if the infant and maternal mortality rates are to be reduced. That these classes are of a low economic status indicates the necessity of a two-fold campaign, one for the necessity of proper care; another for free facilities.
Chart VII shows the extent of education of prenatal care of women interviewed at the Memorial and St. Philip's hospitals from December 1930 to April 1931.

CHART VII.

Extent of Education of Prenatal Care of Women at Hospitals under Study.
December 1930-April 1931.
23 or 48% of the white women and 50% of the colored women have never received any education in prenatal care, 12% or 23% of the white, and 20 or 41.7% of the colored received brief education, and 4 or 3% of the colored, and 16 or 30.8% of the white received detailed education in prenatal care. And effective distribution of literature are education by visitation, on prenatal and postnatal care, and facilities is apparently a crying need.

76% of the 100 women interviewed have received some kind of prenatal care, 48% by private physicians, and 52% at clinics. 29% did not go to their physicians until the ninth month of gestation, 35% began receiving care from their physicians before the 5th month and 65% after the 5th month.

67% of the women, 71% colored and 29% white, attended the Medical College of Virginia Dispensary. 1.6% received prenatal care at the Venable Street Clinic and 25% at the Instructing Visiting Nurses Association. 33.3% of those attending the clinics went there before the 5th month and 66.2/3% after that time.
<table>
<thead>
<tr>
<th>Month: Prenatal Care Began</th>
<th>Total Number</th>
<th>Total W.C. C.</th>
<th>Total M. C. V.D. Venereal I.V.A.</th>
<th>Total W.C. Total W.I.C. Total W.C. W. C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>Second</td>
<td>11</td>
<td>11</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Third</td>
<td>12</td>
<td>10</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Fourth</td>
<td>14</td>
<td>10</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Fifth</td>
<td>14</td>
<td>10</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Sixth</td>
<td>14</td>
<td>11</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Seventh</td>
<td>14</td>
<td>11</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Eighth</td>
<td>14</td>
<td>11</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Ninth</td>
<td>14</td>
<td>11</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>57</td>
<td>39</td>
<td>13</td>
</tr>
<tr>
<td>Total W.C. C.</td>
<td>32</td>
<td>24</td>
<td>39</td>
<td>13</td>
</tr>
<tr>
<td>Total M. C. V.D. Venereal</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Total W.C. Total W.I.C.</td>
<td>100</td>
<td>62</td>
<td>96</td>
<td>30</td>
</tr>
<tr>
<td>Total W.C. W. C.</td>
<td>100</td>
<td>62</td>
<td>96</td>
<td>30</td>
</tr>
</tbody>
</table>
The above table shows that only 5.1% received prenatal care the first month. This is indicative of the necessity of beginning the educational program among those classes most involved, as soon as it is practical. It is obviously a mistake to wait until conception has started to endeavor to locate the uneducated. The contrast between the percentages of those patronizing the clinics, who waited until the 9th month to seek prenatal care, and those who patronized private physicians as late as the 9th month of gestation, might lead us to the conclusion that the 29% would have been considerably reduced had they known of the free facilities. This conclusion is further supported by the fact that 59% of these had never heard of the Medical College of Virginia Dispensary and 44% of the Instructing and Visiting Nursing Association.

Distribution as to the referral of these women to the clinics is shown in Table 12.

**TABLE XII.**

<table>
<thead>
<tr>
<th>REFERRAL</th>
<th>TOTAL</th>
<th>WHITE</th>
<th>COLORED</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>39</td>
<td>15.1</td>
<td>24</td>
</tr>
<tr>
<td>Friends</td>
<td>20</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Agencies</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Physicians</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mother</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Self</td>
<td>9</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
15.4% was sent to the clinics by their mothers, 51.3% by friends, 5.1% by agencies and 5.1% by private physician. 23.1%, knowing about the clinics already, went of their own accord. At the clinics, 59% secured some kind of written material on prenatal and postnatal care.

It is apparent that there is little concentration on the educational aspects of free facilities. This may account for the most recently increased educational campaign of the Instructing Visiting Nursing Association. The new type of Mother's Day is decidedly a forward step toward meeting the present need. Likewise, facilities to educate the public in general, need to be maintained in order that the 51.3%, those who were told of the clinics by friends, can be increased.

The fact that 84.6% felt that this clinic care helped them and 52% of these who had prenatal care, did not have it for their previous children is significant of the progress.

From Table XIII we find the attitude of these women toward hospital care.

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Total</th>
<th>White</th>
<th>Colored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Hospital Best</td>
<td>75</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td>Home Best</td>
<td>14</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Didn't know</td>
<td>11</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>
75% of the women, 38% white and 37% colored, thought that the hospital was the best place to have their babies delivered, because they received more attention and because better facilities were available there. Those who preferred being at home did so because either their other children were there or they did not like hospitals. This shows little antagonism to hospitalization as a method of reducing maternal and infant mortality.

The deaths of babies born in a hospital of mothers under study is shown in Table XIV.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Total</th>
<th>White</th>
<th>Colored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>13</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Abortion</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Small Pelvis</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Prematurity</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

13% of the babies born of the 100 women died; 22% had not yet been born, and 21% of the women had miscarriages. The above percentages indicate that under normal conditions hospital delivery is efficient and that as previously pointed out many of the deaths in hospitals are due to complications.
We have attempted to analyze the causes of both infant and maternal mortality. We shall present the facilities in Richmond, Virginia, which helped to reduce these mortalities. Infant and maternal mortality in Richmond have so many factors in common as to their civic aspect that this aspect shall be treated collectively in the following chapter.
ANALYSIS OF THE CIVIC ASPECTS OF RICHMOND, VIRGINIA,
IN RELATION TO INFANT AND MATERNAL MORTALITY.

We are now ready for analysis of the civic aspects of Richmond's infant and maternal mortality rates. Under civic aspects, we shall consider the facilities available for prenatal, delivery and postnatal service in Richmond. Special consideration shall be given the free facilities as to their location and extent of patronage.

The prenatal clinics are, the Venable Street Clinic, South Richmond Clinic, Medical College of Virginia Dispensary, and Instructing Visiting Nurses Association. The first two mentioned are under the supervision of the Bureau of Public Health.

The location of these clinics according to Map I are well located. This takes into consideration the geographical distribution of infant deaths of Richmond for December 1930, January, 1931, and February 1931. As indicated on Map I, these stations are located in order as listed above, on Venable Street, on East Eleventh Street, Twelfth and Clay, and Cherry Street.

The institutions for free delivery service are Evangeline Booth Home, Spring Street Home, Sheltering Arms Hospital, Memorial and St. Philip's Hospitals.
The Spring Street Home and the Evangeline Booth Home are provided for delivery service for white mothers of illegitimate babies. This delivery service is not under the supervision of the Medical College of Virginia but is under private physicians who give their services. These institutions combine delivery and postnatal service for illegitimate babies.

The Sheltering Arms Hospital offers free delivery care to white women who are unable to pay regular fees.

The Memorial Hospital for White patients and St. Philip's hospital for colored patients have accommodation for free delivery care. The number of beds in these wards are surprisingly low. Memorial Hospital has 13 beds and ten bassinets, and St. Philip's hospital has the same number of beds and bassinets and one premature bed.

The other clinics, besides Medical College of Virginia Dispensary make a practice of referring their prenatal patients to these institutions. Thus, we see that the prenatal facilities are distributed, while there is a degree of concentration as to the delivery service.

This may work to an advantage in that the prenatal clinics by being so distributed probably are more accessible to the patrons. On the other hand it involves "loop holes" in that the patron must be transferred, except in the case of the Medical College of Virginia Prenatal Clinic.
The author wishes in no way to reflect upon the cooperation of the clinics with the Medical College of Virginia Delivery Service or Prenatal Clinic. However, the number of people who must handle a patron usually increases proportionately the number of chances of a slip in efficiency. This is obvious when we consider the necessity of establishing new contacts and sometimes a duplication of efforts to establish psychological approaches. Furthermore, the student may be called to a delivery without any knowledge of the history of his patient.

In Chart VIII, infants of this study are classified according to those delivered by students, midwives, and physicians.

CHART VII.

Attendance at Birth of Infants dying in Richmond, Virginia, December 1930, - March 1931.
The following facts are based upon figures given in the above chart. Sixteen or 21.5% were delivered by midwives in contrast to 39%, or 52.6% delivered by private physicians. The physicians had 31.1% more than the midwives and 25.6% more than the students of the Medical College of Virginia. Of the 27% delivered by students, 58% of the deaths occurred in hospitals. The students' rate can be attributed to the facts that they delivered those infants whose parents belonged to a lower economic status and who were unable to pay a private physician's fee. In 1929, 82% of the births were attended by physicians in contrast to 18% delivered by midwives. In that year, 39% of the births occurred in hospitals.* The small number reported by midwives is due to the licensing of midwives in 1921.

The idea that the practice of midwifery should be entirely obliterated has been refuted by different studies made in the United States and London.** Dr. Baker of the Division of Child Welfare in New York City in 1919, said that the morbidity and mortality both of mothers and babies are greater in New York City among those attended by midwives**. The trained or supervised midwives according to Dr. Julius Levy, 1919, of the State Board of Health, New Jersey, reported births more frequently and promptly, and they are more disposed under advice and instruction to use silver nitrate.**

* 1929 Report the Department of Public Welfare, Richmond, Va.
Dr. W. P. Watson, 1929, in a paper on "Responsibility of the Obstetric Teacher in Relation to Maternal Mortality" pointed out the need for "preaching against meddlesome midwifery by a redoubled effort on the part of teachers to impress upon their students the essential normality of a vast majority of cases and the dangers of unnecessary interference." He also emphasized the responsibility of the obstetric teacher for dieting and teaching students in prenatal clinics. *

As that discussed for delivery service, Richmond's postnatal clinics are not a part of the Medical College of Virginia's program. Therefore, the patient must be, probably again, transferred to one of the following: Veneable Street Child Welfare Clinic, South Richmond Child Welfare Clinic, the Louisiana Street Child Welfare Clinic, the Instructing Visiting Nurses Association postnatal clinic on Cherry Street, and the City Home Child Welfare Clinic. The Medical College of Virginia Dispensary attempts to pay each patient one visit after delivery. The Instructing Visiting Nurses Association, are, according to our information, the only organization in the city granting free bedside nursing service.

The Instructing Visiting Nursing Association employs 24 nurses, who administer, prenatal, postnatal and canvassing services. The prenatal and postnatal services include nursing and clinical services. Under canvassing, we include all attempts to locate pregnant mothers in need of free

service and educate them to attendance at the clinics. This involves visitation.

The number of nurses employed by the Child Welfare Division of the Bureau of Public Health in Richmond was six for 1921. These do not grant free bedside nursing and some conception of the type of work done by them may be gathered from the following report for 1929.

1. Hours spent for prevention of infant mortality mortality rate 19,474

2. Visits to babies under one year of age 14,416

3. Visits to Midwives 280

4. Visits to Expectant Mothers 390.

5. Number of babies under supervision 3,526.

A correspondence course is sent out from this department to mothers unable to attend the clinics.

In New Haven, Connecticut, the Department of Health conducts no prenatal or postnatal clinics, but they have four welfare nurses who encourage the use of such clinics which are operated by the Visiting Nurses Association. There are 62 generalized nurses in the New Haven Visiting Nurses Association who stimulate attendance at their clinics.\

Private physicians and institutions which give advice and care to babies should be included in these facilities.

Some postnatal treatment is given to babies at the Spring Street Home and Evangeline Booth Home. The former requests that the mother remain in the home at least four months after the birth of her child, and the latter until she becomes self-supporting or is re-established in her family.

The day nurseries which take children as young as three months, may contribute toward lowering the infant mortality rate. The nurseries for white children are located on Louisiana Street in Fulton District, Belle Bryan Day Nursery on 19th Street in Church Hill, and Sunny Side on Laurel Street in Central District. (Map I). There is a day nursery department for colored children, at the Friends' Asylum for colored orphans, which is located on Charity Street in Central District. Others are conspicuously missing.

The extent to which most of these facilities are used was also investigated. Of the 78 infants studied, only 18 are 23% of the mothers received any prenatal or postnatal care at Clinics, 11 or 61% of these were colored and 39% were white.

The red spots on Map I indicate the patronage of prenatal clinics by the mothers of infants who died from December 1930 - March 1931.

It is significant that these homes are located near either child welfare or prenatal clinics.
Of the total deaths of this study, four of the mothers of infants who died and one woman who died from a puerperal cause from the South Richmond District received prenatal care at Clinics. One mother from Fulton and five from Church Hill attended Clinics during gestation. 6 or 21.7% of the mothers of infants who died from Central District had prenatal care at clinics. Only 1 or 3.3% of the mothers of infant deaths from Northside attended clinics. (Map I). This may be due to the absence of clinics in that district. None of the three women from West End received care from clinics.

Unfortunately the number who received care from private physicians is unknown.

39 or 50% of the infant deaths and 100% of the six maternal deaths occurred in hospitals in the city. Although this seems to be a large percentage, it must be kept in mind that the infants and pregnant women are taken to them only when very serious complications set in. This is especially true of the Memorial, Sheltering Arms, and St. Philip's Hospitals, where there are free maternity wards.

From July 1929 to July 1930, there were 318 obstetrical patients admitted at the Memorial Hospital, 91 of these were private patients and 227 were placed in the ward. During the same period at St. Philip's Hospital, there were 11 private and 263 ward patients. At both hospitals during this period, there were 19 or 3.2% infant deaths and 18 or 3% maternal deaths. This shows
the low percentage of infant and maternal deaths occurring in these hospitals. The report for Sheltering Arms for this period was not available.

No study of facilities would be complete without a comment on whether they are capable of handling increase patronage. Especially is this true in view of our recommendation that an attempt be made to increase patronage. It is probably true that if those who should patronize the clinics, in Richmond, actually did, the facilities would prove inadequate but at present, due to ignorance, the women do not use all the facilities available. This is substantiated by the fact that there are only 13 beds each at the Memorial and St. Philip's Hospitals, and none have been refused admittance due to lack of beds.

According to Dr. W. T. Sanger, President of the Medical College of Virginia, the Memorial and St. Philip's Hospitals would be embarrassed by increased patronage.

The modern movement is toward having all babies delivered in hospitals. 73.98% of all births in 1929 in Syracuse, New York, occurred in hospitals. That city attributes its low infant mortality rate, which was 55, to the large percentage of babies being delivered in the hospitals.* In that city, there is a staff of 32 public

* Report of Public Health Department, Syracuse, N. Y. 1929.
health nurses getting into most of the homes where services are needed. These contacts or calls are made through registration in the services of Child Hygiene (infant and preschool) communicable disease and tuberculosis follow up. The nurses deliver all birth certificates which takes them into all types of homes.*

In contrasting the births in hospitals, Richmond had in 1929 only 39% of its births occurring in hospitals, while Syracuse, New York's percentage was 73.98%. It is desirable that both white and colored mothers go to the hospitals for delivery for their own sakes as well as their babies. Thus, if there be any need of increased facilities, it is apparently in the line of hospitalization.

The staffs of these institutions might be increased along the line of nursing and medical social service so that the clinics might be fed by education through visitation. The education levels previously discussed should emphasize the necessity of education by personal contact rather than by literature.

According to the Report of the Maternity Center, N. Y., for 1930, effective reduction in those rates can be accomplished by hospitalization and intensive prenatal and postnatal care.

* Martin, Agnes, Department of Public Health, Syracuse, N.Y., 1931.
"The study demonstrates that, on the score of all essential indices, prenatal care, as conducted by the Maternity Center Association, produces effective results. The mortality of the mothers was reduced to about a third of the mortality occurring in the same area among women not receiving the intensive care offered by the Maternity Center. Infant deaths in the first month of life were reduced 32% as compared with the control group in the same area. But it is only true that in spite of the gains, the irreducible minimum has not been reached in the mortality of mothers, or in the diminution in the deaths of babies under one month. There are still too many misfortunes to mothers and babies under the present regime. A combination of such a service as the Maternity Center Association gives with a well controlled Medical Delivery Service, preferably under a hospital's supervision, would more than likely eliminate many of these misfortunes.

"For the country as a whole, the results already achieved in the Maternity Center experiment reported in this study, have very definite implications. If the same type of service could be rendered universally and the same results obtained, 10,000 of the 16,500 women who die annually could be saved; many still-births could be prevented and some 30,000 babies that annually now die, under one month, would be living. The need for the future is obviously to put into operation the machinery which has been demonstrated over these years to be effective."

The following is a brief statement of the work of the Maternity Center Association:

"Since 1922, the Association has been giving to its mothers under its care medical and nursing supervision, care and instruction during pregnancy; help in arranging for delivery care; nursing assistance at time of

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delivery; nursing supervision, care and instruction during the post partum period; a post partum medical examination, and help in arranging medical supervision for the baby and further care for the mother when necessary.

"It is the policy of the Association to urge each mother to register as early as possible in pregnancy, with the doctor or hospital physician who would deliver her. All mothers are helped to select, from the medical services available in the district, the service most suited to their condition. As a result, the physician responsible for the delivery care has the advantage of first-hand knowledge of his patient's condition throughout pregnancy. When, in spite of every effort of the nurse, no physician has been employed, or when the patients are to be delivered by midwives, medical supervision during pregnancy is provided through the Maternity Center Association Clinics. The nursing supervision is given partly in the home of the patient and partly at the nursing centers.

This work is done by:

1. Instructing the mothers during pregnancy in:
   A. The mother's hygiene - nutrition, rest, exercise, and how it may be fitted into the daily regime of the home.
   B. Preparation for the baby, including its clothes, bed, toilet supplies, and their care.
   C. The preparation of delivery supplies and a plan for the mother's care during delivery and the lying-in period.
   D. The care of the baby.

2. Observing and questioning the mother to learn to learn about symptoms and discomforts needing attention:
3. Studying the mother's home surroundings and family relationships so as to discover - and help to solve - any problem which in any way may disturb her peace of mind.

4. Considering the health of every member of the family.

5. Helping the doctor or midwife during delivery.

6. Giving or teaching some responsible person to give - the necessary care to mother and baby during the days that follow.

7. Teaching the family why a well baby needs continuous medical supervision and why a mother needs an examination by a doctor when the baby is six weeks old and helping to arrange for these and for further care when that is indicated.

8. Keeping the doctor and hospital informed by sending a detailed report of each visit including findings and advice. " *

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IV - HISTORY AND PLANS OF OTHER CITIES.

Since the plans for reducing the rates of Richmond are so involved with past plans of Richmond and other cities, the following presents an outline of work done in other cities.

In New Haven, Connecticut, as early as 1878 records show that infant mortality was recognized as the most accurate meter of the standard of hygiene in any area. From a study made in July 1878, of 56 infants, with few exceptions, deaths occurred in streets which were indifferent to sanitary conditions and unable to correct them. In 1884, when a study was made of intestinal diseases, it was found that four-fifths of the deaths from diarrhea were within the first year after birth. Therefore, the conclusion was reached that during the first year, the chief source of danger to human life was from digestive organs; and that a large part of infant deaths were from uncleanly houses and premises, from "impure air" and soil and improper food. It was concluded that a large part of these deaths were preventable. In terms of unclean houses, premises, impure soil, air and improper food, the charts show no definite reduction until 1906. At this time, the health department carried on such an extensive program that the rate dropped to 102 in 1907 from 138 - 1906. In 1907, a clean milk campaign was conducted. In
1913, five nurses gave instruction to parents living in the "plague" spots of the city on the care of milk and on feeding the infant. At intervals from 1909 to 1922, respiratory diseases played an important part. A record control of infant diarrhhea and of infant measles for New Haven. By the efforts of the members of the Public Health Department the public has been educated in helping that city in its extensive program to such an extent that in 1929, New Haven's infant mortality rate was 47, second to the lowest in the United States of Cities over 100,000. *

Syracuse, New York, is another city which has a low infant mortality rate due to work done through the Department of Health. Recently, institutes have been held for nurses on maternity and infant care. The number of babies delivered by physicians, in 1929, was 94.6% in contrast to 3% by midwives. Another cause of the low mortality is that 74% of the babies were born in hospitals. This was apparently due to the building of a new hospital and the opening of a maternity ward in another hospital. The cutting down of the city's infant mortality rate from 105 in 1920 to 55 in 1929 was not only due to the success of the general infant welfare campaign conducted by the Health Department and other agencies, the educational campaign by department

agencies, newspapers, and magazines; but also to the greater activities in safeguarding the food and milk supply, 98% of which is pasteurized, and in improving general sanitary conditions.*

One of the outstanding reports in 1929 was that given by the East End Maternity Hospital, London, which shows that during the entire experience of the hospital deaths of mothers occurred at the rate of only 2.1 per 1000 born in the home practice of the hospital, or 1.35 per 1000 infants born in its entire experience. This low rate is attributed to the education and care which is given the expectant mother. All of the women attended were married and poor. "When the pecuniary Maternity Benefit under the National Insurance Act is forthcoming the manager of the hospital seldom feel justified in claiming part of it."

In the total amount of payments received from patients was £1,291 in 1928, the total amount received from patients was £7,640.

Patients book for maternity attendance in the sixth or seventh month of gestation. Out of our 2,000 patients in 1928, only a dozen had failed to book which implies that the first condition of successful midwifery was secured in most of the cases attended at this institution. Each mother was expected to attend and did attend an antenatal consultation at the hospital. A fortnightly consultation was held at which all

"Primiparae and other pregnant women with an unfavorable history in previous pregnancies were required to attend." Others were seen and examined three times during gestation. These fortnightly consultations were held four times a week. Any patient found to have a trace of albuminuria or to present a malpresentation of the foetal head or any other abnormality, was referred to the medical clinic. When a patient was found to have a venereal disease, she was referred to the venereal disease clinic at the hospital where she was immediately treated.

In the lying-in hospital were employed five midwives and one relieving sister. In the district work, two sisters, and eight midwives were employed who lived in the hospital. "The discovery of wrong presentation was an important part of the antenatal work. The midwives were trained to recognize these, and version for breech presentations were usually carried out in the thirtieth week of gestation. This has been done for the last fifteen years, and it partially accounts for the low infant mortality in the experience of the institution."

As pregnancy approached its term, determination of the position of the foetal head, and of its size in relation to that of the pelvis, became an important part of the skilled midwife's work.
The urine was tested in every case fortnightly from the time of booking. As for other complications, the main indication was to prevent their occurrence.

Sir Arthur Newsholme, Former Chief Medical Officer of the Local Government Board of England and Wales attributed the low rate to the following causes.

1. The patient was quickly made to realize that a deep interest was being taken in her welfare.

2. The patient almost without exception obeyed in every detail, the instructions given to her.

3. These instructions were reduced to their utmost possible simplicity.

He felt that since this rate for 1928 was 1.35 in comparison with 3.09, London's rate as a whole, other committees might halve their rate if the mothers were given equal care.

In contrasting New Haven's past plans with Richmond's, it was found that the campaign for reducing the infant mortality rate dates back much further than for Richmond. Even as far back as 1884, New Haven conducted a detailed and extensive study and campaign which overshadows the work done in Richmond of more recent years. The fact that, in 1929, 74% of the babies in Syracuse, New York, were born in hospitals, in contrast to the 35% in Richmond, may be

one of the causes that Richmond's Infant Mortality rate, that year, was 32% greater than that of Syracuse. Also, for the past ten years Syracuse has carried on a much larger campaign through education.

In contrast to Richmond's limited facilities, London encourages trained midwifery, educates the women in prenatal care, and offers a great deal of hospital facilities.

Aberdeen, Scotland, likewise, has a full educational program. The examination of the program may be suggestive of improvements for Richmond's future plans for the reduction of these rates. Concerning Aberdeen's program, Dr. J. A. Stephen states that "while individual teaching is being done to a certain extent, none more valuable than given by the health visitor in her home visitation, much can be accomplished by class teaching or teaching en masse."

For the successful carrying out of this work certain requisites are necessary.

A. Accommodation.

(1). A room sufficiently large to hold, say 60 mothers. The mothers are invited to the centers by the health visitors who call on each mother on the tenth day after confinement. Each mother, unless she is expectant, has her baby on her knee, and if the talk is interesting, the mother keeps that baby quiet.

(2). A room to hold toddlers of the mothers.
B. Staff.

A considerable number of voluntary workers plus one or two official health visitors. The mothers get a cup of tea on assembly to the accomplishment of music as this seems to put the babies in good humor. Three or four workers remain in the lecture room during the talk, and should a baby prove troublesome, nurse it or remove it till it settles down.

C. Equipment.

Blackboard, Diagrams, Photographs, Models, Pamphlets, etc. Stove for cooking demonstrations.

These centers meet weekly from September to June and two medical talks or demonstrations are given per month. Time of lecture does not exceed 30 minutes.

Fathers' Meetings will be found equally interesting and popular, and during the past session, 1930, an attempt was made to have an open meeting where fathers and mothers could attend together provided arrangements could be made for looking after the children at home.

* Stephen, J. A.; The Importance of Education in Maternity and Child Welfare, Hospital Social Service, April 1931, Pg. 360-361.
V. - RECOMMENDATIONS AND CONCLUSIONS.

The validity of the suggestions which follow may be questioned in that the group studied is small. Nevertheless, they at least suggest the possibilities of a more elaborate study conducted along the same lines.

In Chapter III an analysis of the materials under study in this investigation showed the inadequacy of our present pre-natal education. Therefore, we recommend that the educational campaign be increased. To be explicit this campaign ideally should begin at puberty or as soon thereafter as practicable.

If public sentiment is against a course of this type in the high schools, there can at least be an attempt to educate, directly after marriage, those classes in which there have been the greatest number of deaths. That these classes are semi-skilled and skilled workmen, and unskilled laborers have been revealed by this study. (Table VII & X).

To educate these, we suggest that the names of women whose husbands are in these classes be gotten from the marriage records and these women be sent educational literature describing the necessity of prenatal and post-natal care, as well as the free facilities available in Richmond.

To bring this list up to date, we recommend that the names
of all women whose husbands' occupations are in these
classes be sent this literature. Their home addresses
also may be secured from the city directory. Referring
to the city directory and marriage certificates will not
reach the mothers of children who are conceived out of
wedlock. Since the greatest percentage of these are
negroes, and since they have less education, there should
be a class in the grammar school, certainly in high school,
to give these colored girls some education on the necessity
and facilities for prenatal care. At first, these educa-
tion levels may seem premature, but the average age for
colored girls in the eighth grade is 14.5.*

The percentage, who stopped school before they
reached the ninth grade, was 68. (Table IX). This per-
centage shows that the colored girls should be given
this instruction before they reach the ninth grade. The
death rate may not be any higher for these classes; namely,
the skilled and semi-skilled workmen, and the unskilled
laborers, but the number of deaths for them is highest
in this study. In other words, people of these classes
are probably the ones who have the most children.

The fact that 61% of both white and colored women
were not educated beyond the eighth grade and 39% stopped
school between the ninth and twelfth grades in an indica-
tion not only of the psychological approach that the liter-
ature should possess but is further indicative of the type
of distribution which is necessary for the literature to be effective. Furthermore, it is indicative of the necessity of education along prenatal lines by visitation. We would then divide our group into two divisions, 61% as described above and 39% who have completed from nine to twelve grades. Certainly for the first group, there should be little dependence put on educational initiative. That is, we do not believe they would read the literature placed in their hands unless it were largely pictorial. Pictorial illustrations of the evils of negligence and other pictures of the free facilities would help to attract them to the clinics, or to the doctor. Visitation supplemented by classes at the clinic is a real need.

A campaign should be held to make the women determine to know something about the course of normal and abnormal pregnancy, and determine to do the right thing for themselves, to interest people in general in the technique of safe delivery; to make the medical bodies of the country demand aseptic technique and non-interference of those practicing obstetrics; and to make the public realize that the responsibility is partly theirs. This might be conducted through newspapers, magazines, lectures and Mother's Day Stories.

Although no women have been refused admittance to the maternity wards at Memorial and St. Philip's Hospitals, and to the clinics, due to lack of facilities, it is believed that if those who ought to attend the free clinics and hospitals were to be educated to their use, there would be
need of increased facilities of this type. In other words, if Richmond's public health nurses and medical social workers were increased and increased canvassing could be had, Richmond's present facilities would be inadequate to meet the new demand. In view of the effective work along the line of tuberculosis which has been done by a Negro nurse, we suggest that some Negro nurses and medical social workers for prenatal and postnatal work might considerably increase the patronage of Clinics among that race where the rates of infant and maternal mortality are so high.

In contrast to facilities for the white, there are no maternity homes for colored mothers of illegitimate children. This is an alarming situation when considered with the knowledge that statistically, in Richmond the colored race presents our greatest illegitimate problem. Therefore, we heartily recommend a home for the colored similar to the two provided for white women.

The problem of unemployment and caring for children, simultaneously, is more pronounced the lower we go in the economic scale. The Negro, in Richmond, surely, in most instances, is in this lower economic group. This, considered with the fact that there is only one day nursery for colored children is the basis for our recommendation that others be provided. Although there be opponents of the day nursery, in many quarters, Dr. J. A. Stephens states that at Day Nurseries valuable instruction can
be given to toddlers. *

The efficiency of Richmond’s present staff and facilities might be increased were there more concentration of these facilities to fewer agencies handling the individual in need of free prenatal, delivery, and post-natal service.

1. That education in prenatal care and hospitalization is an important factor in further reduction of infant and maternal mortality rates in Richmond.

2. That the greatest number of deaths occurred in the classes among semi-skilled, skilled and unskilled workers.

3. That our present attempts to get prospective mothers to seek early prenatal care are not 100% effective.

4. That the Negro and the White Races present different educational problems.


6. That the facilities for caring for colored illegitimates are inadequate.

7. That with increased education, increased facilities are needed at the Memorial and Saint Philip’s Hospitals.
CONCLUSIONS.

The materials analyzed in this investigation show:

1. That education in prenatal care and hospitalization is an important factor in further reduction of the infant and maternal mortality rates in Richmond.

2. That the greatest number of deaths occurred in the classes among semi-skilled, skilled and unskilled workmen.

3. That our present attempts to get prospective mothers to seek early prenatal care are not 100% effective.

4. That the Negro and the White Races present different educational problems.

5. That the present Day Nursery facilities for the Negroes are inadequate.

6. That the facilities for caring for colored illegitimates are inadequate.

7. That with increased education, increased facilities are needed at the Memorial and Saint Philip's Hospitals.
8. That there is a need of increased nursing and medical social service facilities with emphasis placed on canvassing for the clinics now in operation. The National Organization for Public Health Nursing at 450 Seventh Avenue, New York City, has studied the ratio of clinic and field personnel to service rendered and needed. Help may be gotten from them.

9. That our present facilities are ideally located and that these now existing might be enlarged rather than new ones built.

10. That student delivery, for the term understudy is a greater success than physician delivery.

11. That the concentration of facilities for prenatal, post-natal and delivery services would probably make for more efficiency in the handling of a case.
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