THE RELATION OF BLINDNESS TO THE SOCIAL AND ECONOMIC STATUS OF FAMILIES IN MICHIGAN

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H. Hoyt Reagan

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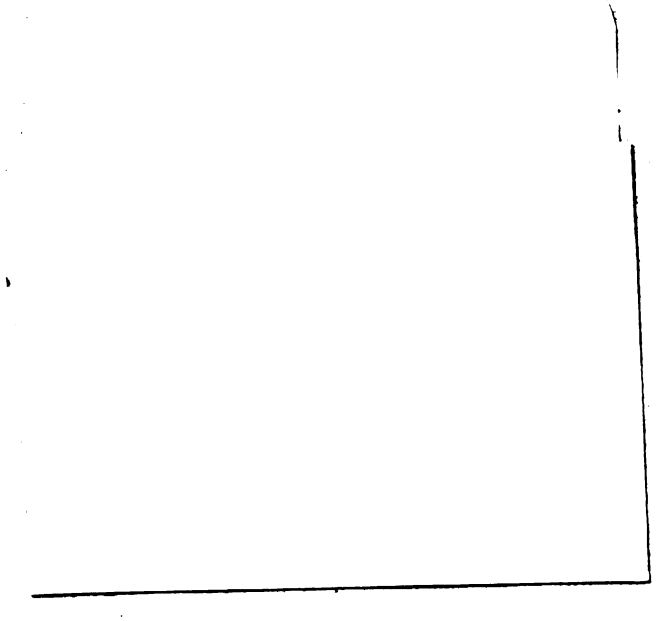
THESIS



THE RELATION OF BLINDNESS TO THE SOCIAL AND ECONOMIC STATUS OF FAMILIES IN MICHIGAN

by

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A THESIS

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CHAPTER I

INTRODUCTION

Origin Of The Problem

During recent years extensive research has been directed toward the mental and other psychological problems of blind children in the United States. Little, however, has been done toward investigating the possible relation between blindness and the social and economic background of the blind. Some have assumed that there are relatively few cases of blindness coming from the homes of the privileged classes, while the families of the lower economic and social level contribute the bulk of the sightless. Any successful preventive program must, however, be based on facts, not assumptions. Careful study should be conducted to determine whether such an assumption is true or false.

Four years of intimate contact with blind boys and girls have caused the writer to become interested in this particular phase of investigation. Differences of opinion and outstanding examples of extremes which are common knowledge have also shown that there is a definite need for such a study.

A further assumption made by some workers with the blind is that the campaign for the prevention of blind-

ness is more likely to be successful in the better classes of homes (economically and socially speaking), with the result that as time goes on, there will be fewer and fewer cases of blindness coming from the homes of the privileged classes who are able to employ specialists more expert in the treatment of those unhealthy eye conditions which are present at birth or which develop later. These authorities also contend that the present preventive program is inadequate because it does not reach the sections where it is most needed. Granting the fact that blindness is no respector of persons or positions, all doctors are not familiar with the causes of blindness, and a number of cases coming from rural areas could have been prevented had proper treatment been available. Many families with low incomes are unable to secure the services either of competent physicians during child-birth or of ophthalmologists when unhealthy situations develop.

All authorities agree that blindness in infancy and early childhood has been greatly reduced in recent years. This is due to several factors which will be discussed in later chapters. Some leaders in educational work for the blind even prophesy that with the increasingly successful efforts for the prevention of blindness, there will be a progressive lowering in the

quality of the pupils who enter residential schools for the blind. This statement though genetically unsound may be founded upon the assumption that the majority of the blind children who come from the well-to-do and socially advantageous homes are more intelligent than those whose homes are economically and socially inferior.

The object and scope of this study is to determine the relationship between blindness and the social and economic status of families by means of a detailed analysis of the family background of all children enrolled as educationally blind in Michigan schools during the 1938-1939 school year. It is predicated upon the following hypotheses: First, that homes of the lower social and economic level contribute the greatest quota of blind, with relatively fewer cases coming from the better classes of homes. Second, that many cases of blindness coming from rural areas could have been prevented had proper treatment been available. Third, that the present preventive program is inadequate because it does not reach all sections of the state.

Historical Background

So important is sight that the average person looks upon its loss as a calamity. Serious as loss

of sight is today, it was still more serious in past centuries.

> It was not until 1750 that it was thought possible to educate a blind person. Even then it came about by chance. A country impresario of Southern France, hit upon a novel way to attract a crowd to his booth at a country fair. He secured a group of blind men to imitate the musicians. He put foolscaps on their heads and spectacles on their noses and placed harps and fiddles and other musical instruments in their hands. The crowds gathered and laughed and cheered at the sight of blind men who were pretending to be educated in music.
>
> There was one man in the crowd, Valentine Hauy, who did not laugh. He looked at the sad spectacle with pity and indignation. He decided to try to make these unfortunate blind people able to read books prepared especially for them and to play on the musical instruments. Valentine Hauy lived to accomplish his purpose and it is to him and another great Frenchman, Louis Braille, who perfected the point system of reading and writing, that we owe the impetus for modern education of the blind.[1]

> In 1829 Louis Braille devised the six-point system which bears his name, and made both reading and writing possible for the blind; it was not generally adopted in this country for many years after its invention, but eventually made its way into every school and institution in England and America.[2]

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(1) Robbins, Eldon. "'Light' for Michigan's Children of the Great Darkness", Michigan Education Journal, Lansing. Vol. XV, No. 8, pp. 274-75, February, 1938.

(2) THE EDUCATION OF THE BLIND: A SURVEY, REPORT OF THE JOINT COMMITTEE OF THE COLLEGE OF TEACHERS OF THE BLIND AND THE NATIONAL INSTITUTE FOR THE BLIND. Edward Arnold and Co., London, 1936, p. 2.

> There are in the United States 65 residential schools and 25 city day schools for the blind. The three oldest schools in the country--the New York Institute for the Education of the Blind, the Pennsylvania Institution and the Massachusetts School for the Blind--were organized at about the same time, in 1832. These institutions are under private management, but they received state grants almost from the start and the states now furnish a large share of their support. The first state school was established by Ohio in 1837. Today every state either conducts a residential school of its own or has a working arrangement by which it pays for the cost of educating its blind children in a similar school in a neighboring state.[3]

In Michigan, the work of educating the blind began about the middle of the last century. In 1854 the Michigan Asylum for the Deaf, Dumb, and Blind was founded at Flint. This school was maintained until crowded conditions forced the legislature in 1879 to separate the two groups of handicapped children. Its 33 children were then moved to Lansing where, from time to time, increased enrollment and enlarged educational program necessitated additional buildings and facilities until nearly 200 pupils were annually in residence at the school. Public Act 148 of 1917, declaring the Michigan School for the Blind at Lansing to be a public school, was passed by the legislature of the state of Michigan.

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(3) Irwin, Robert B., The Blind and Resources for Their Aid. WHAT OF THE BLIND? American Foundation for the Blind, N.Y.C., 1938, p. 5.

The Present Preventive Program In Michigan

At the present time the state of Michigan does not maintain any organization or department for the prevention of blindness within the state. The only legislation directly relevant to the prevention of blindness (at the time of this study, 1939) consists of a law passed August 14, 1913, requiring the use of silver nitrate drops at birth to prevent Ophthalmia Neonatorum or "Babies' Sore Eyes". Through this medical treatment of babies, blindness due to disease and congenital causes has been greatly reduced, especially among cases of blindness due to gonorrheal infection at birth. Most of the expert social work and guidance has been applied to the treatment, care, and education of the young blind rather than to the prevention of further cases in Michigan. All of the research and treatment programs concentrating on prevention have as yet been out-of-state in origin and limited in their effect.

Two small, individual programs operating with private funds were put into effect in the state to meet this need, but the only one known at the present time which includes prevention in its program is the Association for Blind and Sight Conservation at Grand Rapids, which attempts to attend to the needs of that city and its environs by maintaining an eye clinic.

The Michigan School for the Blind has always considered prevention as part of its function, and a program is carried on in connection with the duties of the visiting teacher and the medical social workers' departments of the school. The field is so great and the finances are so limited that the results are necessarily discouraging.

Importance Of Sight

Various estimates have been made concerning the percentage of impressions coming from the outside world through the different channels of the senses, but all persons with normal vision rank sight as the most important of all senses. There are a multitude of impressions coming to normal people through all the hours of light, natural or artificial. Through sight come impressions of light, shade, and color, form, movement, and emotion. Even in sleep, dreams are predominantly visual.

In the Sight Saving Review for September 1936, Dr. Richard S. French makes the following statement:

> From the evolutionary point of view, sight is a result or product. Modified cells in the normal structure of certain plants and animals have a special sensitivity to light, which follows its special focusing or condensation. From these simple structures or responses it is a long way to the human eyes, but the steps are nearly all present in a graduated series and the stimulus of light is evident in every modification. The inner self adjustment of the organ-

> ism is equally evident, and the fact of light as a major factor in the environment is shown to such an extent that it sometimes looks as if some supreme power had formed a perfect pair of eyes and then built around them.
>
> Dr. Haines traces alertness largely to light stimulus. He claims that without light the world is narrowed to a sphere six feet in diameter, the world of immediate contacts, for sound gives us little, smell still less; and sight, hearing, and smell are the only distance ceptors. With light our environment becomes virtually unlimited.[4]

Definition Of Blindness

There are so many degrees of blindness, varying from total darkness to a condition where the sense of vision seemingly exists in a slight measure, that it is difficult to formulate a definition for blindness.

Nebraska defines a blind person as one "who is destitute of useful vision so as to be incapacitated for the performance of labor, rendering such person incapable of earning his support." The Ohio law holds that, "any person of either sex who by reason of loss of eyesight is unable to provide himself with the necessities of life shall be considered blind."[5]

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(4) French, Richard S., "Sight Conservation as an Educational Problem", Sight-Saving Review, 6:170-7, September, 1936.

(5) Irwin, Robert B., and McKay, Evelyn C., BLIND RELIEF LAWS--THEIR THEORY AND PRACTICE, American Foundation for the Blind Legislation, N.Y.C., Series No., 2, 1929, p. 5.

Many use the four-fold definition for blindness of the American Foundation for the Blind which distinguishes four degrees, i. e.,

1. Absolute blindness.
2. Economic blindness--less than 20/200 in the best eye.
3. Vocational blindness--unable to continue work.
4. Education blindness--unable to attend the public schools.

When the 1930 Census of the Blind was taken, the enumerators were instructed to include as blind any person who could not see well enough to read, even with the aid of glasses. No provision is made for securing additional information on the blind in the 1940 Census which is now in the process of being taken.

At the Michigan School for the Blind any child, a resident of the State of Michigan between the ages of six and nineteen, whose vision is so defective that he cannot be educated in the regular public schools is considered blind and, if physically fit and mentally capable of receiving instruction, is eligible for admission.

In general, it is safe to assume in formulating a definition of blindness that a person may be considered blind if sight is either entirely wanting, or is so slight as to be of little material service in the ord-

inary affairs of life where eyesight is essential. This is usually interpreted in ophtholmological terms to mean visual acuity of 20/200 (Snellen)[6] or less in the better eye with correcting lens.

Method Of Investigation

Although the majority of blind children in Michigan are enrolled in the Michigan School for the Blind at Lansing, there are Braille classes in the public schools of four other cities, Detroit, Grand Rapids, Jackson, and Battle Creek. Because these classes are widely scattered and because of the wide scope and personal nature of the data to be secured, it was found advisable to prepare a schedule of questions for every blind pupil enrolled in each of these schools in Michigan.[7]

After careful consideration of the many factors which might best aid in determining the economic and social background of a blind child, the following data

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(6) The Snellen measurement of visual acuity is a standard test in which the child is required to read various sizes of type at a measured distance. If, at a distance of 20 feet, he can read only the larger type ordinarily read by a person of normal vision at a distance of 200 feet, he is said to have a visual acuity of 20/200.

(7) A copy of the schedule used may be found in the Appendix.

was found to be the most pertinent: sex, age, place of residence, birthplace, cause of blindness, others blind in the same family, nativity, type of home, size of family, language used in the home, church preference, parent-child relations, and the occupation and income of the parent.

Data concerning the 186 pupils enrolled in the Michigan School for the Blind were obtained by interviewing each child and securing as much information as possible. The remaining material was obtained from the records of the superintendent, the school principal, the visiting teacher, the medical-social worker, and the hospital.

The 75 schedules from the Braille classes of the other schools were filled out as completely as possible by the same methods with the cooperation and assistance of the various teachers.

Analysis of the material gathered from these 261 schedules has been used as a basis for the conclusions reached in this study.

Delimitations Of This Study

Pupils enrolled in sight conservation or so-called "sight-saving classes" are not included in this study. Such pupils are cared for in specially equipped rooms in the public schools of some cities. Use is made of

the customary visual methods of teaching such as large-print texts, special pencils, paper, blackboards, and chalk in these schools. The presence of more than 20/200 vision on the part of the pupils necessarily eliminates them from consideration in this study as blind.

CHAPTER II

THE BLIND IN MICHIGAN SCHOOLS

Number Of Pupils

The enrollment of blind pupils for the 1938-1939 school year is given in TABLE I which shows 261 attending special classes for the blind in Michigan schools.

TABLE I

NUMBER OF BLIND IN MICHIGAN SCHOOLS
(1939)

CITIES	NUMBER	PER CENT
M. S. B.[8]	186	71.3
Detroit	54	20.7
Grand Rapids	9	3.4
Jackson	8	3.1
Battle Creek	4	1.5
TOTAL	261	100.0

Of this group the greatest number are attending the Michigan School for the Blind at Lansing, which has an enrollment of 186. Next in numerical importance are the Braille classes of the Special Education Division of the Detroit Public Schools which accomodate 54 children. Following these two larger schools are the Braille classes of Grand Rapids, Jackson, and

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(8) Michigan School for the Blind.

and Battle Creek with 9, 8, and 4 pupils respectively.

Included in these groups are three who are deaf-blind, four who are post-graduates, two taught by a Special Home Teacher, and four boys and one girl who are attending Michigan State College.

In addition to the present enrollment, the Michigan School for the Blind has a waiting list of 14 boys. During the past two years 23 blind children have been refused enrollment, 18 being mentally unable to do school work, and 5 being physically incapable of caring for themselves, having a combination of mental and physical disability, which along with blindness, made group education and training impossible. The blind child who is also feeble-minded is either kept at home or placed in an institution for feeble-minded on the theory that lack of mental ability is a greater handicap than blindness, and that it is unfair to the other pupils to have such children in school. Such a child should be placed in an institution fitted to cope with his major handicap.

Comparison With Number Of Blind In The United States

Reference to a recent study of the blind in the United States by Robert B. Irwin of the American Foundation for the Blind shows that "...there are approximately 5,800 pupils enrolled in 65 residential

schools for the blind, private and public, and approximately 500 pupils enrolled in 24 day schools making a total of approximately 6,300 blind pupils enrolled in schools in the entire United States."[9] In other words, slightly over four per cent of the blind pupils of the United States are enrolled in Michigan Schools.

TABLE II

COMPARATIVE NUMBER AND PERCENTAGE OF BLIND IN THE UNITED STATES AND IN MICHIGAN SCHOOLS BY AGE GROUPS FOR 1930

YEARS OF AGE	UNITED STATES	PER CENT	MICHIGAN SCHOOLS	PER CENT
5-9....	1,113	16.1	40	15.3
10-14...	1,814	26.2	91	34.9
15-19...	2,039	29.4	105	40.2
20-24...	1,965	28.3	25	9.6
TOTAL	6,931	100.0	261	100.0

The United States Census for 1930 reports 6,931 blind persons in the United States between the ages of five and 24 years as shown in the above table.[10] This

(9) **Irwin**, "The Blind and Resources for Their Aid", loc. cit., p. 5.

(10) The Blind and Deaf Mutes in the United States, United States Bureau of the Census, Department of Commerce, Washington, D.C., 1930, 3 p.

makes a difference of 631 between the total approximate school enrollment indicated by Irwin for the United States and the census report. This number does not seem to represent too great a discrepancy when consideration is given to the fact that 23 applications of mentally or physically handicapped blind were refused by the Lansing school alone during a two-year period. Another partial explanation might be the fact that there is a difference of 8 years between the census report and Irwin's study, although under normal conditions any increase in population should be accompanied by a similar proportunate increase in the number of blind. A third, and also incomplete explanation for this numerical variation would be the fact that in all of the schools, pupils have been graduated or dismissed before the age of twenty-four years, and still others are on the waiting lists. This may indicate that the total number of blind of school age in the United States may be considerably higher than that shown by the United States Census of 1930, although the group between 5 and 24 years was probably more completely reported than any other since children in school would be easily located by the enumerators. It is, of course, possible that in rare cases a misinformed mother fearing that her child may be taken from her and placed in an institution fails to report

it as "blind" to the enumerator, and thus it is recorded as sighted. However, blindness is so unusual that there is little chance of such a child's reaching school age without his blindness being ascertained.

In further consideration of TABLE II it is found that the 20 to 24 age group has a percentage difference of 18.7 between the 28.3 per cent shown in the census report for the United States and the 9.6 per cent enrolled in Michigan schools. This condition may be attributed to the fact that most of the pupils either successfully finish their high-school courses or else drop out before reaching the age of 24.

Blindness and Sex

A question often asked is, "Which are there the most of among the blind children, boys or girls?" The following table shows that the blind population of Michigan schools consists of 162 boys and 99 girls, which is a ratio of 1.6 to 1.

Why are there more blind boys than girls? No conclusive evidence is available to answer this question. First and simplest, yet only a partial explanation, is the fact that there are more males than females in the state of Michigan. According to the

1930 census[11] there are of all races in the state of Michigan 898,191 males and 879,336 females between 5 and 25 years of age which is a ratio of 102 males to 100 females. In comparison with the sex ratio of 163 males to 100 females for the pupils, it is evident that the number of blind boys is considerably in excess of the average for the state.

TABLE III

PERCENTAGE COMPARISON OF SEXES OF BLIND PUPILS IN MICHIGAN SCHOOLS (1939)

SEX	NUMBER	PER CENT
Female	99	37.9
Male	162	62.1
TOTAL	261	100.0

A further partial explanation is the fact that boys are likely to be more active than girls, and are therefore more apt to have accidents; yet when consideration is given to the causes of blindness it is found that a total of only 16 or 6.1 per cent of the blindness in Michigan schools has been caused by ac-

(11) Population Bulletin of Michigan, Composition and Characteristics of the Population, United States Bureau of the Census, Series II, Department of Commerce, Washington, D.C., 1930, p. 5.

cident. Of this number 11 are boys and 5 are girls or a ratio of slightly more than 2 to 1. Other cases of blindness in boys might be attributed to what is known as "Sex Limited Disorders". Some of these defects, though carried by the female side of the family show themselves only in the males. "An example of this is Leber's Hereditary Optic Atrophy. Most people are ignorant of this fact, but if the sisters of the affected males would abstain from parenthood, the disease could be almost exterminated. In general, there is no risk to the descendants of men suffering from this disease."[12] Even in spite of these conditions other unexplainable factors must enter in to account for the greater number of blind boys than girls.

In TABLE IV the pupils are divided into age-sex groups, where it is found that the number of boys exceeds that of girls in each age-sex group except in the youngest or the the 5-9 group, where the number is exactly the same.

Also in consideration of TABLE IV it will be noted that the percentage of girls exceeds that of boys in the 5-9 age groups by 7.9 per cent when the calculations are

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(12) Joseph, G. W. N., "Heredity Blindness", Outlook for the Blind, 29:21, February, 1935.

based on the total number of boys and total number of girls separately. In all of the other three age-groups the percentage of males is higher than that of females.

TABLE IV

COMPARISON OF SEXES IN AGE GROUPS OF BLIND PUPILS IN MICHIGAN SCHOOLS (1939)

AGES	MALES		FEMALES	
	NUMBER	PER CENT	NUMBER	PER CENT
5-9	20	12.3	20	20.2
10-14	57	35.2	34	34.3
15-19	69	42.6	36	36.4
20-24	16	9.9	9	9.1
TOTAL	162	100.0	99	100.0

According to these figures the greatest number of both boys and girls are between the ages of 15 and 19 years. The next largest group is the 10 to 14 year age group. The numerical predominance of these two groups could possibly be explained by a natural hesitancy on the part of the parents of blind children to send them to school at the normal age of six. This is especially true for the children who attend the residential school at Lansing. Then, too, it would be incorrect to assume that all blind children would necessarily be suitable

for school entrance at the age of six.

The available statistics giving the number of blind males and females of all ages in the United States would not be comparable to the data in this study which is confined only to the blind pupils enrolled in Michigan schools. However upon an arithmetic expansion the assumption might safely be made that the proportions would not vary greatly regardless of the ages or the size of the groups to be compared. The relation between the number of blind males and females in the United States is conclusively summed up in the following statement by Harry Best in his recent publication recording his extensive research on the blind in the United States:

> Of the blind persons in the United States 57.5 per cent are males and 42.5 per cent females. For every 1,000,000 males in the general population 588 are blind and for every 1,000,000 females 444 are blind. For every 100 females among the blind there are 135.7 males. The reason for this excess proportion among the blind is ascribable to greater exposure of males to industrial accidents, explosions and acids. Probably another factor is the greater prevalence among males of venereal diseases, which directly or indirectly causes frequent loss of sight.[13]

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(13) Best, Harry, BLINDNESS AND THE BLIND IN THE UNITED STATES, The MacMillan Co., N.Y.C., 1934, pp. 175-76.

Ratio Of Blind To The General Population

The following data are based upon the fifteenth Federal Census, which was taken in 1930. Although such statistics are not absolutely accurate today, they are the most recent figures available.[14]

Population of United States in 1930..122,775,046
Population of Michigan in 1930.....4,842,325
Blind in U. S. in 1930, all ages.....63,489
Blind in Michigan in 1930, all ages.....1,742
Blind males in Michigan in 1930, all ages..1,021
Blind females in Michigan in 1930, all ages..721

According to these figures there would be a ratio of 517 blind persons for every 1,000,000 of the general population of the United States, or 0.5 per 1,000. For the general population of Michigan the ratio would be 359 blind per 1,000,000 or 0.36 per 1,000. These figures indicate that conditions are slightly better in Michigan than the average for the entire United States, although the fractional difference is too slight to be of significance.

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(14) "Population", UNITED STATES BUREAU OF CENSUS, Vol. I, Department of Commerce, Washington, D.C., 1930, p. 6.

CHAPTER III

"CAUSES" OF PUPIL BLINDNESS

Explanation Of Terms

There are many causative factors contributing to blindness, such as infectious diseases, chemical injuries, industrial and play accidents, various forms of cataracts, brain tumors, hereditary and congenital conditions, venereal diseases, and many others, but for the sake of clarity and simplicity, the "causes" of blindness will here be grouped under eleven general headings.

To facilitate the interpretation of TABLE V which is to follow, a brief explanation of the terminology used, which is not self explanatory, is necessary.

> Heredity: A hereditary defect means one that is transmitted from the parents or ancestors to their offspring or descendants. A true hereditary defect may not be prevented by any means known to science, being a defect in the germ plasm of the parents which prevents the development of a perfect individual.
>
> Congenital Causes: This term is often confused with heredity, although it means simply that a defect or disease is present at birth. Some congenital eye diseases may be prevented by proper treatment of the mother before the birth of the child. An example of this is Congenital Syphilis.
>
> Cataracts: A cataract consists of degenerated lens fibers. A congenital cataract may not

in some instances show itself until some years after birth.

Ophthalmia Neonatorum (Babies' sore eyes): Mainly caused by gonococci germs and listed in TABLE V under Gonorrhea.

Infection: That condition which arises when bacteria enter the body and affect the vision.

Tumor: A new growth of cells in the brain or on the optic nerve and not the result of inflamation, being atypically arranged and growing at the expense of the body yet serving no useful purpose.

Albinism: A congenital absence of pigment involving the choroid coat and irises of the eyes.

Malignancy: A growth or virulent condition affecting the eyes, for example Sarcoma.

TABLE V

COMPARISON OF THE "CAUSES" OF TOTAL BLINDNESS IN MICHIGAN SCHOOLS

CAUSES OF BLINDNESS	NUMBER	PER CENT
Congenital Causes.....	93	35.9
Congenital Cataract...	38	14.7
Gonorrhea.....	29	11.2
Heredity.....	29	11.2
Infection.....	20	7.7
Accident.....	19	7.3
Tumor.....	14	5.4
Syphilis.....	8	3.1
Albinism.....	5	1.9
Malignancy.....	3	1.2
Tuberculosis.....	1	0.4
TOTAL	259[15]	100.0

(15) In two cases the cause of blindness was unknown.

Although reliable information on the so-called causes of pupil blindness has been difficult to obtain, this table shows clearly that the four greatest factors reported as the probable causes of blindness in Michigan school children are: general congenital causes, congenital cataracts, gonorrhea, and hereditary causes. Accidents and infections are also factors to be reckoned with. It will be noted that 14.7 per cent of child blindness in the state was supposedly caused by congenital cataract, and statistics show that 12.5 of the pupils in all the residential schools for the blind in the United States are there because of congenital cataract.[16]

The number classified as "congenital" indicates that these are the cases most in need of attention from the standpoint of prevention. If the necessary money and facilities could be made available for the work, a more intensive study of this group to obtain a maximum of information concerning the causes and methods of prevention probably would result in a definite decrease in the number of blind in this group.

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(16) Berens, Conrad, M.D., "What Organizations for the Blind Can Do In Preventing Blindness", WHAT OF THE BLIND? American Foundation for the Blind, N.Y.C., 1938, p. 23.

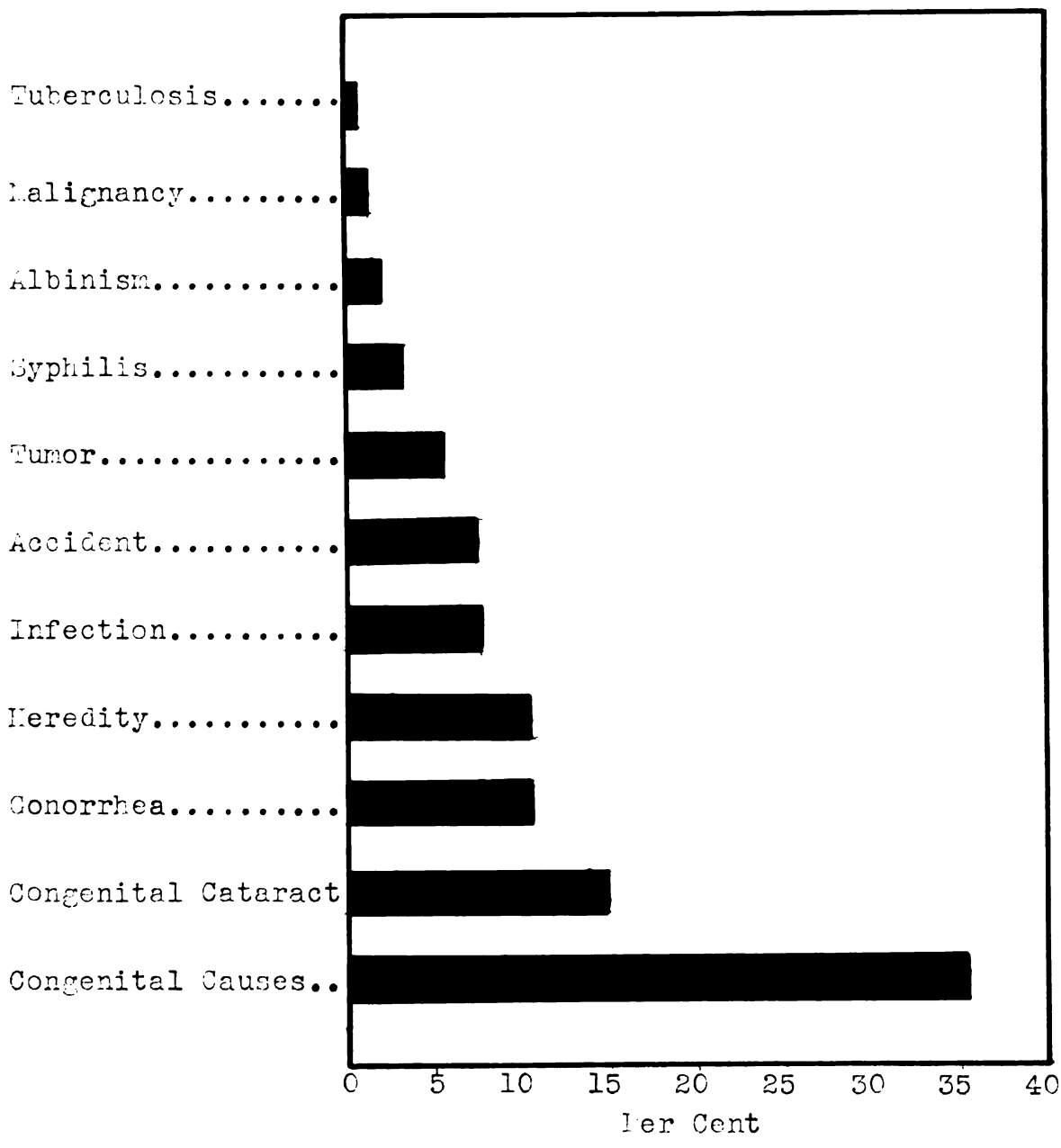

Figure 1

PERCENTAGE COMPARISON OF THE "CAUSES"
OF PUPIL BLINDNESS IN MICHIGAN SCHOOLS

Figure 1 shows graphically the reported causes of pupil blindness in Michigan.

Presence Of Blindness Among Others In The Families Of The Blind Pupils

As we have already seen that many of the blind pupils have eye conditions which are hereditary or congenital, it might be expected that, since these can operate only through a limited number of diseases, other members of their immediate families would have similar eye defects. Of the entire group, 184 or 70.5 per cent reported themselves as being the only members of their family who were blind; 47 or 18 per cent claimed one other blind member; while 22 or 8.4 per cent reported two other blind persons in the family; and 8 or 3.1 per cent claimed either 3 or 4 other blind members in the family.

Blind brothers were reported by 29, while 21 claimed blind sisters; 11 had sightless mothers; 5 had sightless fathers; and 10 reported other blind relatives outside of the immediate family consisting of grandparents, aunts, uncles, and cousins. In some instances there are pupils whose blind ancestors can be traced back several generations, the blindness appearing not only in direct line but in indirect or collateral lines as well.

Best claims that 2.5 per cent of all of the blind in the United States have parents who are cousins.[17] In some states there has been consideration of the prohibition of the marriages of congenitally blind persons, as well as the marriage of certain other classes. The proposal has also been made that after the birth of a blind child to a couple, the parents be prevented, by sequestration or by sterilization, from having other children.[18]

From the preceding data the apparent influences of hereditary and congenital factors upon blindness may be observed. Evidence is clear to the effect of heredity in the extent to which blindness presists in given families. It is indicated further that blindness is not always transmitted directly from parent to child, but may appear in general family groups. However, conclusions regarding the exact connection of hereditary and congenital conditions and blindness are problems of eugenics and medical science of which our knowledge is very limited.

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(17) Best, Harry, Op. cit., p. 71

(18) American Medical Association, "Transactions of the Section on Ophthalmology", Journal of the American Medical Association, 19:61, 1918.

CHAPTER IV

AREAL DISTRIBUTION OF BLIND PUPILS BY COUNTIES AND LOCAL COMMUNITIES

Population Of Nearest Village Or City

It is not only important to know the total number and population ratio of the blind pupils for the state, but also to consider county and community differences. The conditions in some communities are well known, while of others little is heard; and often almost no attention is directed by metropolitan areas toward the less populous regions.

As a rule, most handicapped persons must remain at home regardless of their possibilities for self support, while a considerable number of the more fortunate, who are physically fit, tend to migrate from the small towns and villages to the larger industrial centers in search of employment. It is only natural then to assume that a certain percentage of those forced by their handicap to remain at home would, were they not blind, be producers in some nearby industrial city. Preventable blindness therefore not only inflicts an unnecessary economic and social burden upon its own community, but also in some instances even robs society of whatever contribution such individuals might make.

If the metropolitan areas are to continue to attract only the sighted by erecting employment barriers against the less fortunate, it is only proper that they should assume a certain amount of responsibility toward those forced to remain at home. In addition, much of this blindness might be prevented if the larger cities could be induced to extend their preventive programs and facilities to include their less populous neighbors. Such a program would benefit not only the local community and the nearby larger city, but the entire state.

To show the relationship between the size of the nearest village or city and the number of blind children they contribute, TABLE VI was prepared to portray the population of home towns and their percentages of blind children. Those coming from farms were recorded by their post office address, which was considered to be their nearest population center and the one having the greatest influence upon the welfare of the family. Wards of the court were recorded from the county responsible for their admission to the schools so that their nearest village or city can not be designated, and therefore must necessarily be excluded from consideration in this instance.

TABLE VI

RELATION OF PUPIL HOMES WITH REFERENCE TO POPULATION OF NEAREST VILLAGE OR CITY

POPULATION OF NEAREST VILLAGE OR CITY	NUMBER	PER CENT
Under 500	20	8.0
500 to 1,000	10	4.0
1,000 to 1,500	9	3.6
1,500 to 2,000	11	4.4
2,000 to 5,000	12	4.8
5,000 to 10,000	28	11.3
10,000 to 15,000	15	4.8
15,000 to 25,000	6	2.4
25,000 to 50,000	20	8.0
50,000 to 75,000	18	7.3
75,000 to 100,000	13	5.2
100,000 to 1,000,000	23	9.3
1,000,000 and over	67	26.9
TOTAL	249[19]	100.0

From TABLE VI it is evident that by far the largest single group is the one classified as "1,000,000 and over". Contained in this population grouping are 67 or 26.9 per cent of the pupils, a percentage more than twice as large as that found in any other division. Cities having a population of between 5,000 and 10,000 contribute the next greatest number having 28 or 11.3 per cent of the total enrollment. The "Under 500" and

(19) Twelve wards of the court not included.

the 25,000 to 50,000 groupings having the next highest percentages are found to be identical, both containing 20 or 8.0 per cent. From this point the percentages descend in gradual numerical uniformity with villages and cities whose populations range from 15,000 to 25,000 reporting the least number of blind pupils namely 6 or 2.4 per cent.

In consideration of the relative sizes of the cities found in these various divisions the highest percentage is for the one containing the only city in Michigan having a population of over 1,000,000. Although 26.9 per cent of the blind children enrolled in Michigan schools come from this city, it in turn also contains 30.7 per cent of the total population of Michigan. A further relationship between blindness and population may be seen in the 100,000 to 1,000,000 classification which contains the two remaining metropolitan cities of Michigan. These two cities, Grand Rapids and Flint, having a combined population of 325,084 represent 12.2 per cent of the state's population, although only 23 or 9.3 per cent of the blind pupils reside in these two densely populated centers.

Cities of from 15,000 to 25,000 population which contribute only 6 or 2.4 per cent of the blind pupils are upon comparison with the general population of Mich-

igan found to contain only 92,000 persons or .002 per cent of the total. It is evident therefore that the combined population of the cities in Michigan of this size is so small that in proportion they actually have more blind children in school than do the larger cities.

The United States Census Bureau defines urban population in general as those residing in cities and other incorperated places having 2,500 or more inhabitants, the remainder being classified as rural.[20] Such a limitation makes it impossible to compare census data with any of the population divisions under 2,500.

Counties According To Per Cent Rural Of Population

A very different picture is shown when a study is made of each county according to its percentage of rural population. More value lies in such a comparison as it does not share the inadequacies of the preceeding one based upon nearest post office address which necessarily eliminated the 12 wards of the court. In the following table each county of Michigan having blind children enrolled in school is grouped on this basis.

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(20) Population Bulletin of Michigan, Composition and Characteristics of the Population, Series II, Op. cit., p. 3.

Comparatively high percentages are located in counties where the population is rural in nature.

TABLE VII

DISTRIBUTION OF BLIND PUPILS ACCORDING TO THE PER CENT RURAL OF THE COUNTIES PER 100,000 POPULATION (1939)

COUNTIES	NO. OF PUPILS	POPULATION OF COUNTIES	RATE PER 100,000
100% Rural	17	115,760	14.7
75% to 99% Rural	24	216,434	11.1
50% to 74% Rural	41	631,779	6.5
25% to 49% Rural	96	1,398,333	6.9
Less than 25% Rural	83	2,100,587	3.9

In consideration of TABLE VII it is evident that the counties furnishing the greatest absolute number of blind pupils are from one-half to one-fourth rural. But when this number is considered in connection with density of population the rate per 100,000 is relatively low. Included in this group are Wayne and Genesee Counties with their large cities of Detroit and Flint. Wayne has two-fifths or about 39 per cent of the population of Michigan concentrated within its boundaries.[21]

(21) Thaden, J. F., The People of Michigan, Michigan Today. Bulletin No. 307, Superintendent of Public Instruction, Lansing, Michigan, 1938, p. 112.

The important feature of this table is that the groups contributing the greatest number of blind pupils per 100,000 are the 100 per cent rural and the 75 to 99 per cent rural. One reason for this is that the people in the more densely populated counties live nearer to facilities for the treatment of eye complaints, and are able to prevent many possible cases of blindness. Cities with a population of 100,000 or over have access to specifically trained eye specialists and hospital facilities, while the smaller cities and rural communities, must usually rely upon the services of the general practitioners, who may have had little or no training in diseases of the eyes.

Harry Best tells us that the ratio of blindness for the United States as a whole, is 49 per 100,000 of the general population for cities of 100,000 or over, 52 for cities of from 50,000 to 100,000 and 68 for smaller areas.[22] Although these figures represent blind of all ages and not merely those of school age, the numbers indicate that the proportion of blind is considerably greater in the smaller cities and towns and rural sections than in the areas where the population is more dense. This situation is directly comparable to the

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(22) Best, Harry, Op. cit., p. 173.

results found in this study.

Distribution Of Homes According To Counties

Of the 83 counties in Michigan, 29 are not represented while the remaining 54 contribute from 1 to 74 pupils each (TABLE VIII). Many of the 29 counties not now represented have at one time or another sent pupils to the Michigan School for the Blind. In contrast, however, many of the counties have always had one or more representatives in the school.

TABLE VIII

DISTRIBUTION OF PUPIL HOMES ACCORDING TO COUNTIES[23]
(1939)

COUNTY	PER CENT RURAL	NO. OF PUPILS	POPULATION	RATE PER 100,000
Antrim.....	100.00	4	9,979	40.1
Arenac.....	100.00	2	8,007	24.9
Barry.....	75.02	3	20,928	14.3
Bay.....	31.84	4	69,474	5.8
Berrian.....	51.85	1	81,066	1.2
Branch.....	71.88	1	23,950	4.1
Calhoun.....	36.61	5	87,042	5.7
Cass.....	73.43	4	20,888	19.1
Charlevoix.....	77.88	1	11,981	8.3
Cheboygan.....	57.20	1	11,502	8.7
Chippewa.....	45.08	2	25,047	7.9
Clare.....	100.00	1	7,032	14.2
Clinton.....	83.75	2	24,174	8.3
Delta.....	38.99	4	32,280	12.0
Dickinson.....	29.21	2	29,941	6.7
Eaton.....	63.12	1	31,728	3.1
Genesee.....	24.56	9	211,641	4.2

(23) Wards of the court are recorded from the county responsible for their admission.

DISTRIBUTION OF PUPIL HOMES
ACCORDING TO COUNTIES (CONT.)

COUNTY	PER CENT RURAL	NO. OF PUPILS	POPULATION	RATE PER 100,000
Gladwin	100.00	2	7,424	26.9
Grand Traverse	37.34	2	20,011	9.9
Gratiot	77.74	8	30,252	26.4
Hillsdale	78.49	1	27,417	3.6
Houghton	72.62	6	52,851	11.3
Huron	100.00	1	31,132	3.2
Ingham	26.78	9	116,587	7.7
Ionia	69.50	1	35,093	2.8
Iron	63.18	1	20,805	4.8
Isabella	75.33	1	21,126	4.7
Jackson	40.21	10	92,304	1.1
Kalamazoo	40.04	3	91,368	3.3
Kent	28.23	16	240,511	6.6
Keweenaw	100.00	2	5,076	39.4
Lapeer	82.33	4	28,348	14.1
Lenawee	73.79	3	49,849	6.0
Livingston	81.24	1	19,274	5.2
Macomb	53.81	3	77,146	3.9
Marquette	30.62	2	44,076	4.5
Mason	52.56	1	18,756	5.3
Midland	58.03	2	19,150	10.4
Monroe	65.50	6	52,485	11.3
Muskegon	32.68	12	84,650	14.4
Oakland	36.71	6	211,251	2.8
Oceana	100.00	1	13,805	7.2
Otsego	100.00	1	5,554	18.0
Ottawa	53.44	2	54,585	3.7
Presque Isle	71.07	1	11,330	8.8
Saginaw	33.14	9	120,717	7.4
Sanilac	100.00	3	27,751	10.3
Shiawassee	55.52	6	39,517	15.2
St. Clair	43.44	9	67,563	13.3
St. Joseph	54.89	1	30,618	3.2
Tuscola	92.24	1	32,934	3.0
Van Buren	85.28	2	32,677	6.1
Washtenaw	43.41	1	65,530	1.5
Wayne	2.50	74	1,888,946	3.9

In absolute terms Wayne county having 74 or 28.3 per cent of Michigan's blind children ranks first, and Kent county having a total of 16 or 6.1 per cent of the pupils ranks second. Thirty-five counties however, have as few as 1, 2, or 3 blind children of school age. The rate per 100,000 is also shown in TABLE VIII but comparisons of the counties on this basis can not be made accurately because the rates are based on too few cases of blindness to insure reliability.

Bearing these limitations in mind, TABLE VIII shows an entirely different picture if the data is considered on the basis of rate per 100,000 of county population. For instance Antrim county which sends 4 pupils to the Michigan School for the Blind at Lansing, ranks first with 40.0 per 100,000 as its total population is only 9,979, while Kent and Wayne counties, because of their greater populations, rank considerably lower.

The distribution, when considered on the basis of rate per 100,000 population, tends to be inversely related to the density of population rather than to the size of the counties. For example Wayne, Kent, and Genesee counties, containing Michigan's three metropolitan cities, have a combined population of 2,341,098 which is 52.1 per cent of the total population of the

54 Michigan counties represented in this study. On the same basis these three counties have 99 or only 37.9 per cent of the blind children enrolled in Michigan schools. The remaining 51 counties represent a combined population of 2,154,031, which is only 47.9 per cent of the total, yet they contribute 162 or 62.1 per cent of the blind children.

In the light of these findings it would seem that the larger cities have fewer blind children in proportion to their population.

The following map shows the distribution of blind children in Michigan--the black figures represent the boys, while the red represent girls.

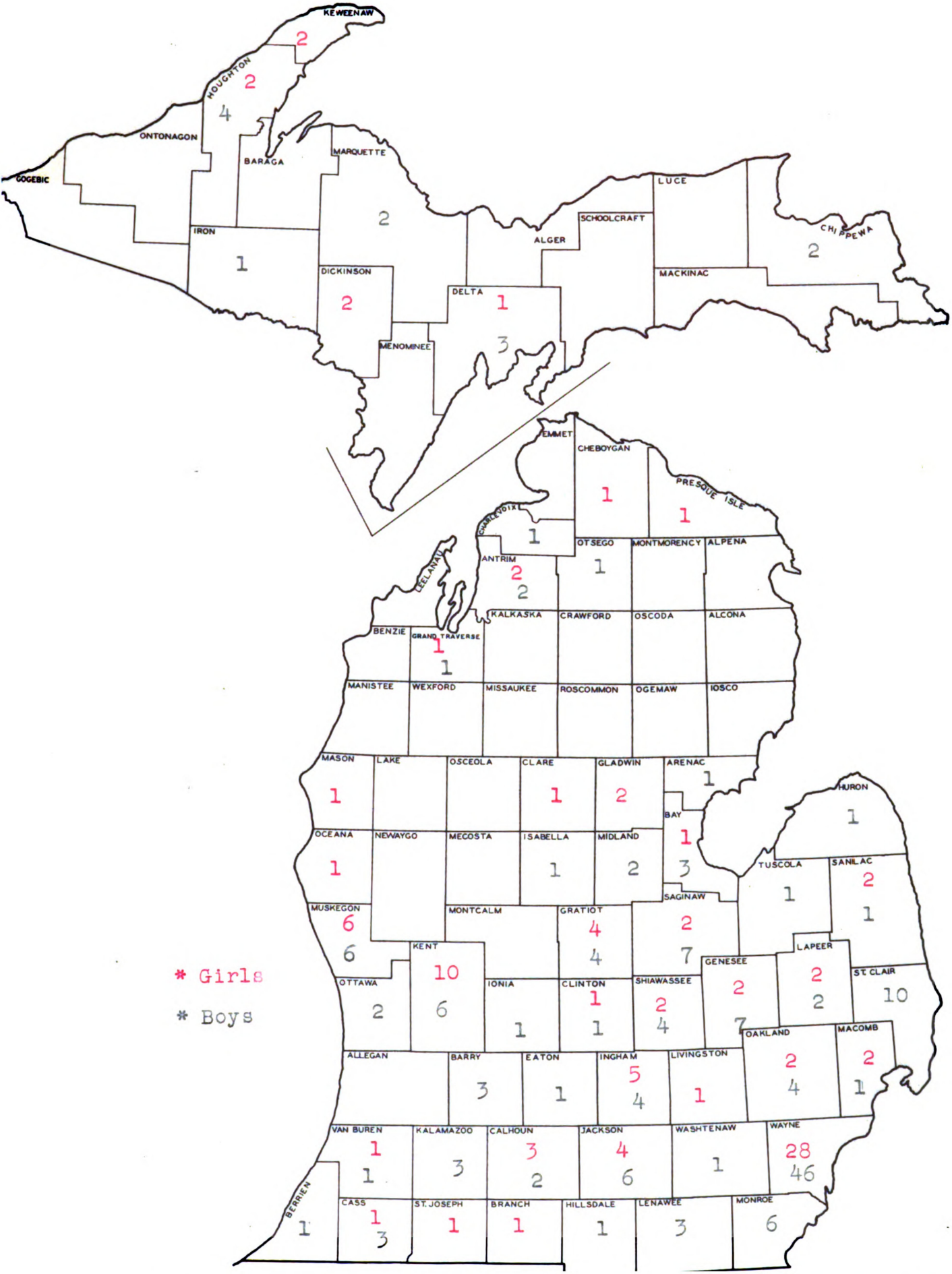

Fig. 3. DISTRIBUTION OF RURAL HOMES ACCORDING TO COUNTIES (1939)

CHAPTER V

PARENTAGE AND NATIVITY

Comparison Of Races

The races represented by the blind pupils in Michigan schools are White 244 or 93.5 per cent, Negroid, or black, 15 or 5.8 per cent, and Indian or part Indian 2 or 0.7 per cent. This racial distribution tends to be similar to the general population ratio of all ages for the state as a whole, Michigan having 96 per cent White, 3.5 per cent Negroid and 0.5 per cent yellow which includes the American Indian.[24] These figures do not therefore bear out the contention that the black race contributes more than its proportionate number of blind children in Michigan although the general opinion is disposed to claim a considerable disproportion.

Birthplace Of Pupils

All but five of the blind children enrolled in Michigan schools were born in the United States, four coming from Canada and one from the Panama Canal Zone, although 16 different states are reported as birthplaces of the group as shown by TABLE IX.

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(24) Population Bulletin of Michigan, Michigan Families, United States Bureau of the Census, Department of Commerce, Washington, D. C., 1930, p. 5.

TABLE IX

BIRTHPLACE OF PUPILS

STATE OR COUNTRY	NUMBER	PER CENT
Central States		
Illinois	3	
Indiana	2	
Michigan	220	
Minnesota	3	
North Dakota	2	
Ohio	1	
South Dakota	11	
Wisconsin	3	
	245	94.0
Southern States		
Arkansas	1	
Georgia	2	
Kentucky	2	
	5	1.9
Western States		
Arizona	1	
California	2	
	3	1.1
Eastern States		
New York	1	
Pennsylvania	1	
Vermont	1	
	3	1.1
Others		
Canada	4	
Panama Canal Zone	1	
	5	1.9
TOTAL	261	100.0

The fact that there is not a single blind child in the schools of Michigan who was born in Europe reflects the results of the increasingly stringent immigration laws. This effect may be more clearly seen from the fact that in 1890, 18.1 per cent of the blind of all ages in the United States were foreign born; in 1900, it had decreased to 16.5, while in 1920 it was 15.5.[25] The number of foreign-born blind in the United States for 1930 is not available.

TABLE IX can hardly be said to reveal the migratory tendencies of families having blind children of school age, although it does show that upon excluding the 220 or 84.3 per cent born in Michigan, 41 or 15.7 per cent of the blind children come from families who for one reason or another have found it either desirable or advantageous to move to Michigan from another state. One boy reported having lived in three states and then left school before the end of the school year because his family was moving out of the state. It is impossible to obtain figures on the movements of these families from city to city within the state.

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(25) The Blind and Deaf Mutes in the United States, Op. cit., p. 1-3. See also The Blind in the United States, United States Bureau of the Census. Department of Commerce, Washington, D. C., 1930, p. 8-10.

Pupil Nativity

In an attempt to determine the relationship of nativity to blindness, each child was questioned and all records carefully examined, but, unfortunately, complete data could not be obtained.

TABLE X

NATIONAL ORIGIN OF PUPILS

COUNTRY OF ORIGIN	NUMBER	PER CENT
Austrian	2	0.9
Belgian	2	0.9
Canadian	5	2.2
Danish	4	1.8
Dutch	9	4.0
English	52	23.1
Finnish	5	2.2
French	11	4.9
German	34	15.1
Indian	2	0.9
Irish	10	4.4
Italian	8	3.6
Jewish	5	2.2
Negro	15	6.7
Norwegian	2	0.9
Polish	19	8.4
Russian	2	0.9
Scotch	9	4.0
Slavic	18	8.0
Swedish	7	3.1
Syrian	4	1.8
TOTAL	225[26]	100.0

(26) Proportion of total sample from which information was lacking, 13.8 per cent. (36 cases)

In cases where more than one country of origin was claimed, that of the father was used, while 36 either did not know or else classed themselves as Americans.

The relationship of nativity to blindness is significant as the country of origin is an important factor from the standpoint of cultural differences rather than physical differences.

TABLE X shows that out of the 261 children in the schools 52 or 23.1 per cent,--almost one fourth are of English origin, and that 34 or 15.1 per cent are of German descent. Continuing in descending order the two groups next largest are the Polish and Slavic races containing 19 or 8.4 per cent and 18 or 8.0 per cent respectively.

In a further comparison the figures in the table were ranked against those of the national origin of the general population of all ages in Michigan. It was found that the numerical positions of the countries represented were so nearly similar in both instances that no evidence is at hand which would permit a definite statement concerning the influence of nativity upon blindness.

Nativity Of Parents

The different combinations of nativity, such as American, foreign-born, and mixed parentage, represent

different degrees of incorporation into American life, and to a considerable extent determine social status.

In locating what social group or groups are responsible for the greatest number of blind children in Michigan, a study of the parents must necessarily be made. Although, among the children, all but 5 of the group were born in the United States, the birth-places of the parents show a wide range and variety of locations. Information was not available concerning 7 parents, who are therefore listed as unknown, while the term "mixed" is used where the father and mother were born in different countries. Because of the small number of cases being considered, the 7 unknowns will be disregarded in the following discussion, to assure more accurate comparisons.

Figures compiled from the schedules show that 170 or 66.9 per cent of the parents were born in the United States. In 52 or 20.5 per cent of the cases, both mother and father were born in the same foreign country, while 32 or 12.6 per cent of the children claimed mixed parentage.

In a comparative consideration of these data with the total population of Michigan, the condition is found to be nearly normal. According to the 1930 Census of

Michigan,[27] 23.9 per cent are foreign-born and 13.9 per cent are of mixed parentage. In a comparison with the entire United States which has only 13.1 per cent foreign-born, it is evident that the percentage of foreign-born in both the state of Michigan, and for the parents of blind children is as a whole above average.

It is popularly believed that certain undesirable situations may be explained by saying that a particular nationality group, or "the foreigners", are largely responsible for them. In the case of blindness this prejudiced explanation is frequently used, and all too often accepted as certainty. The data fail however, to support such a contention in the particular problem under consideration.

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(27) Population Bulletin of Michigan, Composition and Characteristics of the Population, Op. cit., p. 5.

CHAPTER VI

PUPIL HOMES

Types Of Homes

In an effort to obtain an understanding of the factors operative in any possible relationship between blindness and the environmental influences of pupil homes, a rough rating of home conditions was made. A simplified schedule was decided upon in an effort to avoid any possibility of influencing answers, and to reduce to a minumum the inaccuracies through misunderstanding which would necessarily accompany any complicated and detailed questioning of laymen.

Facts already accumulated clearly indicated that allowance must be made for multiple causation rather than single. In other words, any relationship between environment and blindness in general or in a given case is necessarily compound and complex, the contention being that there is a relationship between blindness and the home situation, that blindness is seldom predetermined, and that it must grow out of the total situation in which the whole family is a part.

In the past all information concerning the home conditions of blind pupils has been primarily the result of local investigation without any thought of state-wide

compilation. In most cities the Braille classes have always been small enough to permit periodic home visitations by the teacher. In spite of their paramount importance only such records were kept of these visits as were considered necessary for the specific problems of the individual school. At the Michigan School for the Blind home visits were not possible until the addition in 1937 of a visiting teacher to the staff.[28] Although the homes of all blind pupils in Michigan have now been visited, few comprehensive facts could be obtained from such uncoordinated sources due to the fundamental differences in procedure for handling the information gained. Such information, however, was readily made available through the uniformity of the schedule.

TABLE XI

TYPES OF HOMES AS REPORTED

TYPE OF HOME	NUMBER OF PUPILS	PER CENT
Good	63	24.1
Fair	77	29.5
Poor	109	41.8
Wards of Court	12	4.6
TOTAL	261	100.0

(28) A copy of the detailed home rating scale used by the visiting teacher of the Michigan School for the Blind is included in the Appendix.

According to the requirements of the schedule, a "Poor" home is considered as being one without any modern conveniences, more than necessarily cluttered and dirty, the absence of reading material, no active church connections, a dirty appearance on the part of the parents, and a noticeable lack of interest in the welfare of others. A "Fair" home is one in which things would be moderately better than in a "Poor" home, with evidences of interest and at least attempts to maintain cleanliness. A "Good" home does not necessarily require wealth, but is one in which the environment is good and opportunities for the improvement of the members of the family are present. It must possess at least some modern conveniences, and show evidences of the worthy use of leisure time.

Reports showing that while many of the families are in poor circumstances financially, the homes may be rated as "Fair" or "Good" in all other respects.[29] TABLE XI shows 109 or 41.8 per cent of the blind pupils coming from homes rated as poor. This percentage when compared with the 24.1 per cent coming from "Good" homes,

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(29) Such a rough method of rating homes is recognized as being partially subjective, making it impossible to check these results against standards for the state as a whole.

tends to indicate a definite relationship between home conditions and blindness.

With such a predominance of "Poor" homes, it is safe to assume that blind children as a group come from homes economically and environmentally below average. This again brings up the question of just how much of this blindness was unnecessary and would have been prevented had many of these children been born in homes which could be rated as "Good".

Size Of Families

Another interesting tabulation concerning the homes is the number of large families from which these blind children come. In gathering the data only parents, foster parents, brothers and sisters were counted, while grandparents, aunts, uncles, or cousins, even though living in the same family, were not considered in the count.

TABLE XII shows that numerically more blind children come from families comprising 4 or 5 members, yet the percentage of children falling into these two groupings totals only 16.5 and 15.7 per cent respectively. At the same time 34 or 13.0 per cent of the blind pupils come from families of 6 members. By combining the group containing 10 members in the family with the 11 or more group, it is found that 23 or 8.8 per cent of the total

number come from families of 10 or more, while more than one-third come from families of 7 or more.

TABLE XII

SIZE OF FAMILIES OF PUPILS[30]

SIZE OF FAMILY	NUMBER IN FAMILY	PER CENT
1	12	4.6
2	3	1.1
3	36	13.8
4	43	16.5
5	41	15.7
6	34	13.0
7	33	12.7
8	20	7.7
9	16	6.1
10	13	5.0
11 or more	10	3.8
TOTAL	261	100.0

No accurate comparison can be made between the data presented in TABLE XII and the average size of families in Michigan, as the 1930 census enumerators included persons related in any way to the head of the family by blood, marriage, or adoption as members of a family. Persons living together and usually sharing the same table although not necessarily related, and

(30) The group listed as "one" in the family includes the wards of the court who come from boarding homes and orphanages.

single persons living alone were also counted as families. An effort was made to obtain a more comparable summary from the Michigan School Census, but finding this data even more inadequate a brief explanation must be given of the limitations involved in making a comparison with the Federal Census.

It is only natural to assume that any child's very existence depends upon a family of at least two parents in the begining, therefore ordinarily speaking there could not be any family smaller than 3, a factor not considered by the census enumerators. In view of this situation, TABLE XIII excludes families of less than 3 members. Of the blind pupils the 12 wards of the court made up the one-member families, while from the state this same group consisted of single persons above school age living alone. The two-member families of the blind children were composed entirely of children from broken homes who were living with but a single parent or relative either because of death, divorce, or court order. In contrast the two-member families from the state group were made up mainly of childless couples and unmarried adults of the same sex. In considering these discrepancies before making a comparison, it would seem only natural to assume that families having blind children would be smaller than average size. This however, is

not the actual result as is shown in TABLE XIII.

TABLE XIII

COMPARISON OF THE SIZE OF PUPILS' FAMILIES WITH ALL FAMILIES IN MICHIGAN (1939)

SIZE OF FAMILY	M. S. B.		STATE OF MICHIGAN	
	NUMBER	PER CENT	NUMBER	PER CENT
3	36	14.6	252,485	31.2
4	43	17.5	212,901	26.3
5	41	16.7	144,049	17.8
6	34	13.8	88,376	10.9
7	33	13.4	50,945	6.3
8	20	8.1	29,281	3.6
9	16	6.5	16,083	2.0
10	13	5.3	8,500	1.0
11 or more	10	4.1	7,545	0.9
TOTAL	246	100.0	810,165	100.0

Although care must be exercised not to draw false conclusions when comparing data of such unlike proportions, it is clearly evident from TABLE XIII that blind children come from families larger than the average sized family in Michigan. It is further shown that 31.2 per cent of all of the families in the state of Michigan consists of 3 persons, while only 14.6 per cent of the blind children come from families of this size. Viewed from another vantage point the table reveals that 37.4 per cent, or considerable over one-third of the pupils come from families of 7 or more mem-

bers while only 13.8 per cent, or within a small fraction of one-eighth of the families in Michigan contain that many persons.

Family size is by no means a simple factor however, and may be related more closely to other facts than to the mere presence of blindness. The large families in most cases are poor families. Or putting it in another way, poverty and large families are more important in blindness than large families without poverty. This is only a start in breaking up the complex factors involving the large family. Burnham in his WHOLESOME PERSONALITY says, "There is evidence that there is an optimum number of brothers and sisters as regards the effect on school achievement and the like, the family of moderate size, three brothers and sisters being usually the best. This is merely one concrete illustration of the manifold ways the family group affects the personality of the child, involving of course the ability to do school work as well as other kinds of performance."[31]

Whereas personality is largely conditioned by the total social environment, the most significant environment for the development of the healthful personality

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(31) Burnham, W. H., WHOLESOME PERSONALITY, D. Appleton Century Book Co., N.Y., 1932, p. 19.

seems to be the family group. Lack of medical attention, educational problems, housing conditions, neighborhood conditions, lack of equal intimacy of all members in a large family, and many other conditions combine to increase the probability of blindness in such situations.

Languages Spoken In The Home

In further consideration of "Pupil Homes" the various languages in daily use by the parents tends to reflect not only the blind child's environment, but also the difficulties involved in any planned program of educating the parents. In homes where a foreign language is spoken the problem of aiding the parents in properly training and caring for their blind children, as well as informing them of modern scientific methods of prevention which will insure a measurable diminuation of blindness is considerably increased; if not in some instances almost insurmountable.

Of the 14 languages represented in TABLE XIV, English, as would naturally be expected, was the language most commonly used in the home, being spoken in 75.6 per cent or about three-fourths of the total number. The Polish, Slavic, Italian, and German languages respectively were the only others reported used in more than 4 cases.

TABLE XIV

A COMPARISON OF THE LANGUAGES SPOKEN IN THE HOME

LANGUAGES	NUMBER	PER CENT
Dutch	4	1.5
English	196	75.6
Finnish	2	0.7
French	4	1.5
German	5	1.9
Hungarian	1	0.4
Italian	9	3.4
Jewish	3	1.1
Polish	16	6.1
Rumanian	2	0.7
Russian	3	1.1
Slavic	10	3.8
Swedish	2	0.7
Syrian	4	1.5
TOTAL	261	100.0

In the entire group 65 or 24.9 per cent come from homes where a foreign language is spoken. In all cases the children speak English, and in many instances the entire family are able to use it with varying degrees of success. In almost one-fourth of the cases however, the parents prefer to use their native tongue within the family group. This continued use of a foreign language within the home may be accounted for in the following ways:

(1) Refusal of parents to give up the customs and language of their native country.

(2) Desire to have the children learn the native tongue.

(3) Presence of grandparents in the home who are unable to speak English.

(4) Low mentality and illiteracy.

Parent Relations

The environmental importance of favorable parent relations cannot be overestimated in any home situation because home environment is the outstanding social background of any individual. Its influence is not only moral, but also physical, mental, and emotional. Of all social background influences, the most important are those in operation for the longer period of time, particularly those embracing the earlier years of childhood. For this reason careful consideration of the family situation is given in this study.

TABLE XV shows 177, or more than one-half of the pupils with both parents living. This does not necessarily mean that they are living together, supporting the home, giving proper companionship, showing proper parental control, and not continually involving the child in family quarrels. In short, only 69 per cent of the blind children reporting both parents living, claimed satisfactory parent-child relationships. The most numerous complaints of home situations are "absence of interest in the child's problems," "lack of companion-

ship," "bad housing," "lazy father," and "lack of understanding". Also in considering the fact that over 68 per cent of the 261 blind children have both parents living, it should be explained that this included any who had left the family, were in prison, divorced, separated, insane, or in an infirmary.

TABLE XV

FAMILY SITUATION

CONDITION	NUMBER	PER CENT[32]
Both Parents Living	177	67.8
Father Dead	24	9.1
Parents Divorced	21	8.0
Step-Father	20	7.7
Mother Dead	19	7.3
Step-Mother	17	6.5
Ward of Court	12	4.6
Both Parents Unknown	9	3.4
Parents Separated	8	3.1
Live with Relatives	7	2.7
Foster Parents	6	2.3
Both Parents Dead	5	1.9
Father Left Home (Living)	4	1.5
Father in Prison	3	1.1
Father Unknown	3	1.1
Mother Left Home (Living)	2	0.7
Mother Insane	2	0.7
Mother in Prison	1	0.4
Father in County Infirmary	1	0.4

(32) Percentages for each family condition are calculated on the basis of the total sample of 261 and do not, therefore, total 100 per cent.

In considering the numbers and percentages in the preceding table which are based upon an enrollment of 261 pupils, allowance must be made for the fact that in many instances the parents of only one child may appear in 2, 3, and even 4 places in the table, e.g., both parents living, parents divorced, father in prison, lives with relatives.

Of the disorganizing factors shown, the absence of fathers through death comes first amounting to 9.1 per cent. Other single factors amounting to 5 per cent or more are: divorce 8.0 per cent, step-fathers 7.7 per cent, mothers lost through death 7.3 per cent and step-mothers 6.5 per cent. The remaining 13 unfavorable marital conditions in the home, each contributing less than 5 per cent, comprise a total of 29.9 per cent.

Such findings would indicate that a number of the parents probably are shiftless, incompetent, or slovenly, factors which in the broadest sense, would not only have a demoralizing influence upon the family, but would also have an important bearing upon the amount of preventable blindness resulting from venereal diseases, ignorance, and carelessness.

Although the number of unfavorable or disorganizing home conditions previously shown is large considering the size of the group, about 42 per cent reported no unfavor-

able home factors, while 29 per cent are from homes with three unfavorable factors. Those claiming two unfavorable factors comprised 19 per cent of the group while single disorganizing influences comprised about 10 per cent of the total. This evidence seems to indicate that when unfavorable conditions are present they are more likely to occur in company with two or more other disorganizing factors than singly.

If the important elements of social status are based upon the presence or absence of these favorable home factors, their relation to blindness is evident. As already shown blind children come less often from homes where these undesirable conditions are not present--a definite indication that the families are of a low social status.

Church Preference

Very little attention has been given to the consideration of any possible relationship between blindness and religious experience. It may be that those who have considered it are agreed that blindness is not clearly related to religious factors. Perhaps a more fundamental reason is the difficulty of studying any essentially religious relationship, especially if it is expressed in affiliation with organized groups, rather than the actual practice of its teaching. For

TABLE XVI

PERCENTAGE COMPARISON OF CHURCH PREFERENCES OF PUPILS WITH MICHIGAN AND UNITED STATES (1939)

CHURCH	BLIND PUPILS		MICHIGAN		UNITED STATES	
	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT
Roman Catholic.....	77	29.5	844,106	45.2	18,605,003	36.2
Protestant.....	165	63.2	700,902	37.6	28,141,601	49.3
All Others.....	7	2.7	214,823	12.9	7,829,635	13.8
No Church Preference..	12	4.6	80,287	4.3	2,452,107	4.3
TOTAL	261	100.0	1,867,118	100.0	57,028,346	100.0

this reason it would be misleading to classify blind children, or their parents, according to religious groups as determined by either implied or actual affiliation and draw conclusions from the tabulations.

In spite of this, another valuable yet less subjective use may be made of such data. The value lies in the fact that when broken down into denominational groupings a considerable insight into the pupil's home environment may be obtained. TABLE XVI shows a percentage comparison between the Catholics and Protestants in the United States, in Michigan, and the reported religious preferences of the blind pupils.

In the preceding table the presence of only 77 pupils of Catholic faith comprising 29.5 per cent is considerably less than the percentage of Catholics for the entire state. In the United States 32.6 per cent are Catholic, while Michigan has 45.2 per cent. In comparison, Michigan has a higher percentage of Catholics than the average for the entire United States, while of the families having blind children in school the number who are Catholics is considerably below the average of either of the other larger groupings.

With the Protestants the data reveals a situation exactly the reverse of that shown for the Catholics. The unusually high proportion of blind pupils from

Protestant homes, namely 63.2 per cent or more than one-half of the entire group, is considerably above the average for either the state or the nation. In the United States 49.3 per cent of the population are Protestant, while in Michigan only 37.6 per cent of the population are affiliated with these churches. The fact that the Protestants in Michigan are 11.7 per cent below the average for the rest of the United States is not especially surprising when consideration is given to the large number of persons who had their origin in the predominantly Catholic countries of southeastern Europe. Among the blind pupils however, there seems to be no explanation for such an unexpectedly great difference between the data obtained in this study and the average for Michigan. Such an explanation must be the subject of further research.

For those having no church affiliations the percentages are almost identical in all three groups, showing that the blind children are not more likely to come from homes having no affiliation with organized church groups. In general, however, it may be said that these children reflect the religious preferences of their parents. In reference to the classification labeled "All Others", only 2.7 per cent of the blind pupils are in this group, while Michigan and the United

States have 12.9 and 13.8 per cent respectively. There seems to be no definite explanation for so great a difference, although one factor which might tend to keep this number below average might be the private schools for the blind maintained exclusively for Jewish children. Although there is no such school in Michigan, one New York institution has a representative in this state. At the present time Detroit is the only city in Michigan reporting Jewish children among its blind pupils.

In TABLE XVII, Group I contains the old established Protestant churches such as Episcopal, Methodist, Congregational, Presbyterian, etc. Group II is made up of lesser Protestant churches of a more emotional nature, namely the Church of God, Evangelical, Nazarene, Pilgrim Holiness, Salvation Army, Tabernacle, Free Methodist, and the United Brethern. Group III contains only those of Catholic faith.

From the cross tabulation of TABLE XVII a situation of interest as well as of environmental importance and social significance is evident. Group I consisting of the more conservative Protestants has a total of 89 or 50.0 per cent of the pupils. When this figure is compared with the percentage of the conservative Protestants in each of the three income groups, it can

TABLE XVII

PERCENTAGE COMPARISON OF THE EFFECT OF INCOMES ON CHURCH PREFERENCES

RELIGIOUS GROUPS	NUMBER				PER CENT			
	INCOME				INCOME			
	RELIEF AND UNDER $500	$500 TO $1000	OVER $1000	TOTAL	RELIEF PER CENT	$500 PER CENT	$1000 PER CENT	TOTAL PER CENT
Group I.....	44	23	22	89	45.8	51.1	59.5	50.0
Group II.....	26	10	5	41	27.1	22.2	13.5	23.0
Group III.....	26	12	10	48	27.1	26.7	27.0	27.0
TOTALS	96	45	37	178	100.0	100.0	100.0	100.0

be seen that persons in those religious groups make up 45.8 per cent of the relief or less than $500 income grouping, 51.1 per cent of the $500 to $1,000 income class, and 59.5 per cent of those with incomes of more than $1,000. With 50.0 per cent being the average, it will be noted that as the incomes increase the proportion of those affiliated with the conservative Protestant churches also tends to increase. Group II comprising 8 of the less distinguished Protestant churches has a total of 41 or 23.0 per cent of the 178 pupils being considered. In this group is found the exact reverse of the trend seen in Group I. With 23.0 being the average per cent, 27.1 per cent for the lowest income group is considerably above the average. As the income increases from less than $500 a year to $1,000, the church affiliations drop to 22.2 per cent which is below average. With the next increase in income to over $1,000 a year the interest in this group of churches decreases to 13.5 per cent, or 9.5 per cent below the average for the group. In Group III it will be noted that income makes little or no difference with the Catholics. Of the 27.0 per cent of the pupils contained in this group the greatest deviation from the average at any income level was only 0.3 per cent.

In attempting to break down the Protestant groups into denominations for the above comparison with the incomes considerable difficulty was encountered. For one thing, the Lansing school was the only one completely reported as to the exact church affiliation. Also from the income standpoint, what might be a comfortable living in the northern part of the state, would in most cases be insufficient in Detroit. In an effort to get as true a comparison as possible data from Detroit was eliminated in TABLE XVII because the high cost of living in that area was not comparable with the rest of Michigan. An equal number of both Catholics and Protestants were removed. All of those incompletely reported were also omitted.

From the table it is evident that the church membership included in Group II decreases as incomes improve, while affiliation with the more conservative Protestant churches increase as the incomes improve. As social status is in general related to income, the indication would be that the churches of Group II tend to attract persons of a lower social and economic status. With Catholicism, however, the situation is different, the tendency is for a person born a Catholic to usually remain one throughout life without change.

The fact that such a large proportion of blind

children come from homes that are affiliated with the churches in Group II might indicate a desire for recognition which could not be obtained in the older established churches of a more conservative nature. The services of these lesser churches are also of such a nature as to serve as an emotional outlet, which in most instances would not be necessary if income and social status in general were improved. TABLE XVII demonstrates that these less prominent churches do not as a rule attract persons of the higher income groups. Church affiliation and income might therefore be said to be attributes associated with blindness, and that the economic and social situation of the family affects the choice of church rather than church affiliation causing the blindness. The fact that affiliation with an emotional religion is related to income as well as to blindness, any conclusion as to which contributes most to the selection of a church cannot be answered by the data obtained in this study but would require more intensive research on this one aspect.

CHAPTER VII

FINANCIAL INFLUENCES

Means Of Pupil Support

The economic situation of the home embodies a group of factors that seem to have a definite relationship to blindness. For years the general economic status of blind adults in their struggle to be self-supporting has received considerable attention and study. In contrast however, the economic situation of the families which annually produce blind children have received only a minimum of attention.

The treatment of facts concerning the relationship between the ability of parents to support their families and blindness will be somewhat similar to that employed later in the study of parents' occupations.

In consideration of the economic status of the parents, TABLE XVIII is devised to show the percentage of cases where public assistance of one form or another is necessary, and to provide a basis for comparison with data for the state as a whole.

In such a classification the 62 or 25.8 per cent of the families receiving full maintenance from either local, state, or federal agencies comprise the largest percentage group. Next in size, and almost as large as

the preceding group is the $500 to $1,000 division containing 60 or 23.0 per cent of the pupil families. The $1,000 to $1,500 incomes and "under $500" incomes are next ranking third and fourth in order with 50 or 18.2 per cent and 27 or 10.4 per cent respectively. The four remaining income groups are all of percentages under 10.

TABLE XVIII

SIZE OF FAMILY INCOMES

INCOMES PER YEAR	NUMBER OF PUPILS	PER CENT
Relief (Full)	62	23.8
Wards of Court	12	4.6
Under $500 (Supplemented)	27	10.4
W.P.A.	24	9.1
$500 to $1,000	60	23.0
$1,000 to $1,500	50	19.2
$1,500 to $2,000	17	6.5
$2,000 and Over	9	3.4
TOTAL	261	100.0

In an analysis of the figures in this table the 12 or 4.6 per cent who are wards of the court with no income report for parents must necessarily be added to those who are entirely dependent upon public assistance. This also would be the case for the 24 or 9.1 per cent of the families supported by W. P. A. employ-

ment. From such a grouping it is found that 98 or 37.6 per cent of the pupils come from dependent families. Taking March 1939 as an average relief month for Michigan, 19.3 per cent, or about 1 out of every 5 persons in the state, were receiving public assistance in some form.[33] From this comparison it is quite evident that blind children tend to come from families of the lowest economic group, there being 36.5 per cent, or more than one-third entirely dependent upon public assistance. This number is nearly twice as great as the average for the entire state.

Such a comparison, however, does not show the complete relief picture, for an additional 27 or 10.4 per cent of the pupils come from families too large to be maintained by the parents' income alone. These yearly incomes are all represented in the "Under $500" classification, and receive supplemental assistance from relief agencies at various times, depending upon need.

Additional information is obtained by breaking down the reported incomes into groups as shown in TABLE XIX. In this manner a general picture of the economic circumstances of both the self-supporting and the re-

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(33) Michigan State Emergency Relief Administration Quarterly Bulletin, Public Assistance in Michigan, Vol. VI, No. I, January-March, 1939, p. 12.

cipients of assistance becomes available. This table combines all forms of assistance and supplemented incomes in an effort to group for comparison.

TABLE XIX

PERCENTAGE SUMMARY OF INCOMES OF PUPILS

AMOUNT OF INCOME	NUMBER	PER CENT
Public Assistance		
Relief.....62		
Wards of Court....12		
Under $500.....27		
W. P. A.....24		
125	125	47.9
Incomes		
$500 to $1,000.....	60	23.0
$1,000 to $1,500.....	50	19.2
$1,500 to $2,000.....	17	6.5
$2,000 and over.....	9	3.4
TOTAL	261	100.0

In observing this data, the proportionate excess of persons receiving assistance from relief agencies is so great that it has the effect of minimizing the other income groups. The fact that 125 or 47.9 per cent of the blind children come from circumstances where the breadwinners are unable to find work sufficiently remunerative to enable them to be self-supporting and maintain a decent standard of living would tend to indicate a definite relationship between income and blindness.

If further groupings were to be made by combining all incomes under $1,000 and all incomes over $1,000, there would be a total of 185 to 70.9 per cent whose yearly earnings are under $1,000 contrasted with 76 or 29.1 per cent, whose annual wage is over $1,000.

Obviously such incomes would necessitate residences in undesirable localities with their accompanying unfavorable conditions and exposures. The financial inability of such persons to employ the services of expensive physicians or specialists, except in cases of extreme seriousness, may be readily seen.

Figure 3, (page 75) has been devised to show at a glance the tabulations given in TABLE XIX.

Parent Occupations

Another aspect of economic instability of the family is found in the occupational status of the parents. For the family as a whole, and especially for adequate family background, the occupation of the father and its accompanying income is a powerful factor in determining social status and environment. The steadiness of work for the father and outside employment for the mother are a part of the general poverty situation, since poverty is greatest when the father cannot consistently earn a living.

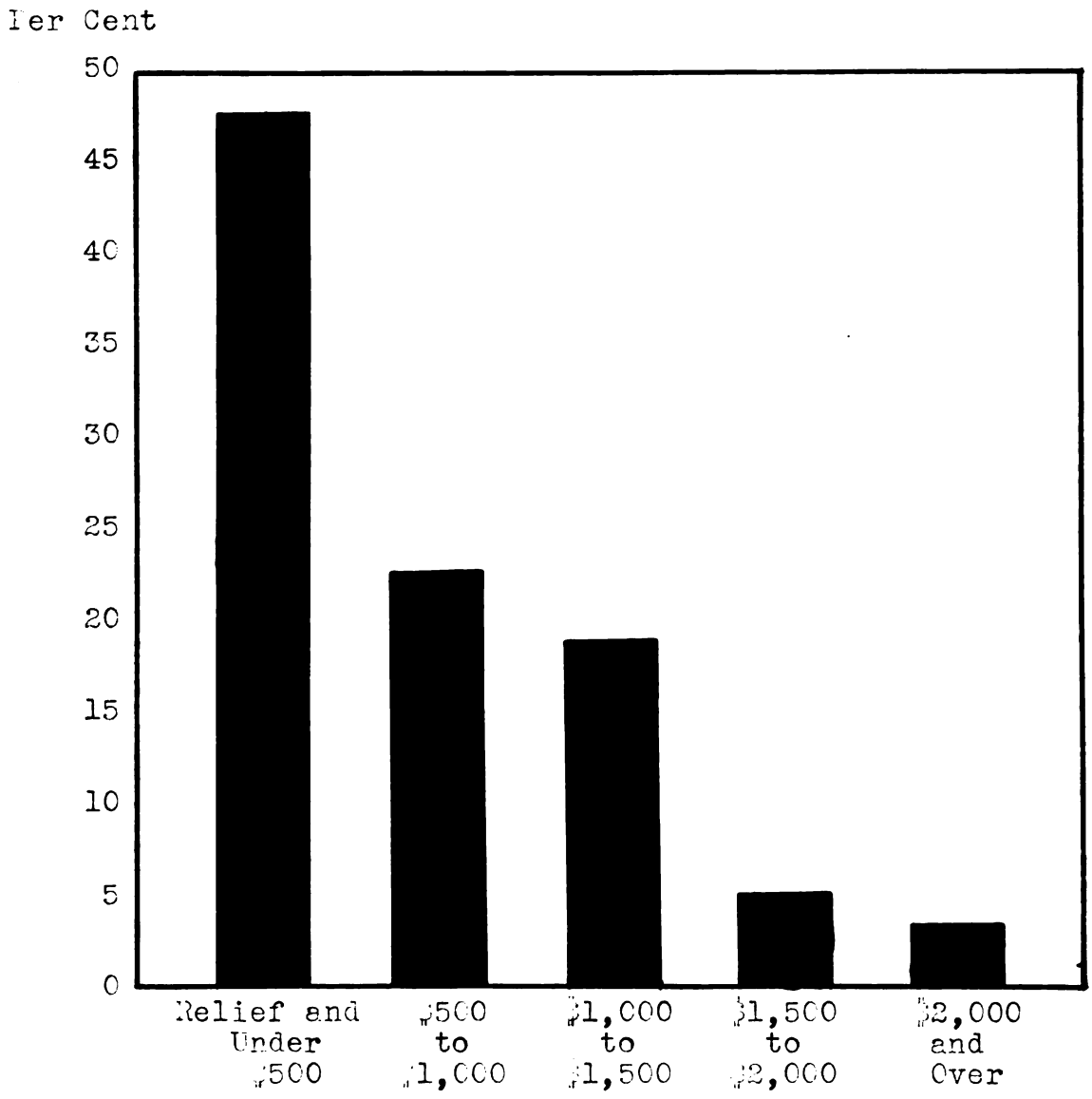

FIGURE 3

PERCENTAGE INCOME OF FAMILIES HAVING MIND

PUPILS

Perhaps the most common question raised in regard to the low incomes of the persons considered in this study is, "Why are so many of these people incapable of self-support?" Doubtless a multitude of contributing factors would be involved in answering such a question. However, TABLE XX answers it to some extent.

TABLE XX

OCCUPATIONS OF PARENTS HAVING BLIND CHILDREN IN SCHOOL IN MICHIGAN

FATHERS			MOTHERS		
OCCUPATIONS	NUMBER	PER CENT	OCCUPATIONS	NUMBER	PER CENT
Professional	1	0.4	Professional	5	1.9
Business	12	4.6	Business	3	1.1
Skilled	25	9.6	Skilled	0	0.0
Semi-Skilled	17	6.5	Semi-Skilled	0	0.0
Unskilled	64	24.5	Unskilled	23	8.8
Farmer	29	11.1	Farmer	1	0.4
W.P.A.	24	9.1	Housewife	187	71.3
Unemployed and on Relief	45	17.3	Unemployed and on Relief	17	6.5
Ward of Court	12	4.6	Ward of Court	12	4.6
No Father	32	12.3	No Mother	13	5.0
TOTAL	261	100.0	TOTAL	261	100.0

In TABLE XX it may be observed that only one or less than 1 per cent of the fathers is a professional man, 12 or 4.6 per cent have businesses, 25 or 9.6 per cent are skilled workmen, while 17 or 6.5 per cent are semi-skilled. Combining these figures, it is found

that only 55 or 21.1 per cent of the total number of fathers have occupations which could not be considered as lower class. Of the 29 or 11.1 per cent who are farmers, many of the farms are so small or so poor that the incomes derived from them must be supplemented by relief agencies.

Among the mothers who work, 5 or 1.9 per cent are classed as "professional". This number includes a practical nurse, a dental assistant, a county nurse, a teacher, and a matron in a children's home. None of the other mothers were considered as being either skilled or semi-skilled, which is a situation directly opposite to that of the fathers, where only one was considered as professional yet 42 or 16.1 per cent were rated as either skilled or semi-skilled workmen. By far the greatest majority of the mothers are occupied as "housewives", comprising a group of 187 or 71.3 per cent.

The number of "unemployed" varies from time to time, for both the fathers and the mothers. A few of the mothers necessarily reported as housewives manage to supplement the family income with odd jobs, such as washing and housecleaning. In the northern part of the state the only employment of some of the mothers is that offered seasonally by the canning factories. Many of

the fathers pick fruit, some are unoccupied except during the navigation season, while others work only during harvest and threshing time. A considerable number have been unemployed two or more years. Unfortunately no way could be found to obtain evidence which might indicate what percentage of these persons would be employable in positions paying average wages and requiring at least a certain degree of intelligence, skill, or knowledge, and what percentage would be classed as unemployable under such circumstances. This information would have to be the subject of further and more intensive research.

CHAPTER VIII

SUMMARY OF FINDINGS AND CONCLUSIONS

The object of this study was a detailed analysis of the social and economic status of families in Michigan having blind children enrolled in Michigan schools during the 1938 and 1939 school year to determine, if possible, any relationship between this condition and blindness.

For hundreds of years blindness was looked upon as one of the great afflictions which a certain portion of the race must accept as a natural heritage. For centuries, little thought was given to the possibilities of the prevention or mitigation of blindness. Time, however, and the advance of medical science, has proved that blindness need not necessarily result from all of its causes.

The interrelation of social status and blindness has been shown. Measures for prevention includes consideration of all that concerns an individual. There seems to be few fields in which this interrelationship is more strikingly seen than in the field of prevention of blindness: for example, pre-natal health, safety in recreation, individualized opportunities in school, control of infectious diseases and, above all, a healthy

home with informed individuals who know how to use the resources for education and health which are available. Today we are convinced that most of our blindness is preventable and question the right of parents to subject this defect upon those who can do nothing else than accept their heritage. It therefore becomes our duty to search out the localities and environments in which preventable blindness thrives and to proceed to eradicate it. The education of people as to the causes of blindness has long been needed to improve conditions in a field where ignorance has been responsible for an unimaginable amount of misery and suffering.

These hypotheses were made: That fewer blind children are born into the homes of the economically and socially privileged classes where the dangers are realized, and where they are able to employ physicians more expert in the treatment of unhealthy eye conditions at birth or those which develop later than in the case of the less fortunate homes; that the rural homes and those of the lower social and economic level will still continue to contribute their customary quota; and that the present preventive program is inadequate because it does not reach all sections where there is need. These statements are borne out by the following outstanding facts revealed in this investigation:

First, the greatest causative factors for the blindness of the children enrolled at the present time in Michigan schools are: congenital causes, in general, congenital cataract, gonorrhea, heredity, infection, and accidents. Except for the hereditary defects, a considerable percentage of this blindness falls into the category of "preventable", indicating that with timely, suitable, and skilled attention a great proportion caused both by local and general diseases may be checked. Injuries and accidents causing loss of sight is no less a field of prevention, for to all, the realization of the risks to which the eye is exposed must be emphasized. The whole question of the reduction of blindness hinges upon the extent to which the many causes responsible for it may be diminished.

A second fact is the great number of pupils coming from families containing from one to four other members who are blind. Immediate attention should be given to these families, for although the babies may not be born blind, they may have obtained either a particular disorder or affliction liable to result in blindness itself or a transmittable tendency to blindness. In all but a few of these cases the cause of blindness might be found to be hereditary in nature. The real danger in the matter seems to lie in the marriage of these per-

sons, whether blind, or with defective vision, who have one of these diseases which is liable to be transmitted.

A total lack of uniformity was discovered in the distribution of blindness with respect to sex. It is logical to assume that blindness being no respector of persons would effect all classes and all groups of people alike regardless of sex. This, however, is not the case, for the excessive number of blind males over females in the Michigan schools is considerably above the ratio of males to females for the population of the entire state. A partial explanation for this situation is found in the fact that: (1) of all races in the general population of Michigan there are 102 males to 100 females between 5 and 25 years of age, (2) a greater number of boys than girls lose their sight through accident, and (3) some diseases are sex-limited in that they are transmitted by the female and affect only the eyes of the male.

Another example of the absence of uniformity was discovered in the distribution of blindness throughout the state. This is brought out by the fact that the greatest single group of pupils per 100,000 population come from counties which are classed as being 100 per cent rural. The second largest group per 100,000

population live in counties of from 75 to 99 per cent rural, while the counties listed as being less than 25 per cent rural have the least number of blind per 100,000 population. Included in this latter group are the counties of Wayne and Genesee containing two of Michigan's three metropolitan cities, indicating that counties whose population is rural in nature have the greatest number of blind in school. Distribution, when considered on the basis of rate per 100,000 population regardless of the rural percentage of the counties, shows the three counties containing the metropolitan cities as having 52.1 per cent of the total population of the 54 counties represented, and only 37.9 per cent of the blind enrolled in Michigan schools. From this fact it is evident that the larger cities have fewer blind children in proportion to the population.

A fifth consideration is one of parental nativity, which to a great extent determines social status. Although not a single blind pupil in Michigan was born in Europe, 5 were born outside of the United States. The number of foreign-born pupils in Michigan schools therefore is not out of proportion with the average for the state of Michigan, which is much higher than the average for the entire United States. Of enviromental importance is the fact that one-third of the

blind pupils have parents of foreign birth. In comparison with statistics for the entire state, this number is not found to be abnormal, although when compared with the number of foreign born in the United States it is evident that both the parents of blind pupils and the state of Michigan as a whole, have more than their proportionate number of foreign born.

An additional factor, and one likely to complicate the situation is the continued use of a foreign language in the home, indicating desire on the part of the parents to retain old world habits and traditions. Such a situation could easily involve any planned educational or preventive program affecting the home. Of the foreign languages regularly used in the home, the Polish, Slavic, and Italian were the only ones reported in numbers greater than five.

A further condition of extreme importance is the home situation and its environmental influences. Reports of home visits show that approximately one-fourth of the blind children come from homes which could be rated as "Good", while over two-fifths are from homes rated as "Poor". With such a large proportion coming from homes obviously inadequate because of mental, moral, educational, or economic insufficiency, the question arises as to just how much of this blindness

was necessary. At the same time it is shown that slightly over one-half of the blind pupils come from homes rated as "Good" or "Fair", and demonstrates the fact that blind children are also produced in conditions which are eminently respectable and environmentally satisfactory.

The size of the families from which the blind pupils come is another contributing factor. Numerically more blind children come from families larger than average size. As poverty and large families usually go hand in hand, the fact that 51.2 per cent or over one-half of the pupils come from families of 6 or more would be likely to increase the probability of blindness.

Next is the question of parent and home relations. Of the children reporting both parents living, 31 per cent claimed unsatisfactory parent-child relationships. Of the large group reporting unfavorable home conditions, the majority claimed two or more disorganizing factors. This evidence seems to indicate that blindness, like any other social problem, is the result of multiple causation, and that unfavorable parent-child relations are not as likely to appear singly as in groups of two or more. The correlation between blindness and other social problems further indicates the need for a more complete preventive program.

The relationship of unfavorable family situations to blindness is another problem to be faced. Since blindness is related to interacting hereditary and environmental factors, it may quite easily have a significant basis in family status. The presence of a great number of unfavorable situations comprising such specific items as homes broken by desertion, divorce, death, criminality, marked poverty, and mental defects, indicates demoralizing influences which would have considerable bearing upon the amount of preventable blindness in such families.

Rather unexpected is the possibility of a relationship between church affiliation and blindness. Of the total group considered in a comparison between church preference and incomes it was found that the blind pupils coming from homes of the very lowest income group were the most interested in the more emotional Protestant churches. It was also found that as income increased, interest in churches of this type decreased. In the more conservative Protestant churches preference increased in proportion with increases in income, showing that blindness and accompanying low incomes tend to influence church affiliations. In a comparison with the church affiliations for both Michigan and the United States, it was found that the percentage of blind pupils

who expressed a preference for the emotional churches was considerably above the average.

Further evidence tends to verify the assumption that the economic situation of the home embodies a group of factors that seem to have a definite relationship to blindness. More of the families having blind children are receiving public assistance in some form than the average number for the entire state. By combining the relief clients with those whose incomes are below that necessary to maintain even the average standard of living, it was found that 70.9 per cent, or almost three-fourths, of the family incomes were under $1,000. From these and similar facts, it is evident that blind children tend to come from families of the lowest income groups. Inability to maintain a decent standard of living would necessarily result in the members of the family being deprived not only of luxuries, but also many of the necessities, of which ophthalmological, medical, and dental attention are usually the most outstanding.

A final probable relationship to blindness was found in the extreme economic instability indicated by the occupations of the parents. Periodic outside employment for the mother was not uncommon, although the majority were found to be housewives. Among the

fathers the number in professions, in business and in skilled or semi-skilled occupations was extremely low. Seasonal unemployment was claimed in many cases. The greatest sources of income for both fathers and mothers were found to be from unskilled labor and relief.

In conclusion, an analysis of the accumulated data tends to substantiate the hypotheses upon which this study was predicated. Among those factors which appear to be related to blindness, the most outstanding is the large number of families who are dependent either entirely upon relief or have supplemented incomes of $500 or less. Other factors presumably related to blindness are: that the majority of homes are rated as environmentally and socially poor; that 31 per cent of the pupils have unsatisfactory parent relationships; that blind children tend to come from larger than average sized families; that the families tend to move frequently from one state to another; that about one-fourth of the group have others in the family who are blind; that an unusually large number of the families are affiliated with the less distinguished churches; that there are more blind boys than girls; that counties of 100 per cent and 75 to 99 per cent rural population contribute the greatest number of blind children in proportion to their population; and that almost one-

fourth of the families prefer to use a foreign language in the home.

The factors considered which do not appear to be related to blindness are: that no special county is outstanding for its proportionate number of blind; that the number of blind in Michigan is not above the average for the United States; that no one race or nationality group is responsible for the blind in Michigan; that the number of foreign-born parents is about average for Michigan; and that none of the blind pupils were born in Europe.

To state the amount of preventable blindness among the Michigan pupils is impossible from such a limited study, but considering the probable causes as they were reported and the amount of medical knowledge concerning them it might be safe to say that with proper conditions and sufficient control at least two-thirds of it is of a preventable nature. No one cause was outstanding although highest numerically were congenital causes, gonorrhea, and heredity. The amount of blindness resulting from accidents which could have been prevented is unknown, but no doubt it is considerable. On the whole, the blind pupils were found to be widely distributed over the state with relatively fewer in the areas of concentrated population which have facilities

for the treatment of eye complaints, thus checking many possible cases of blindness.

RECOMMENDATIONS FOR A PREVENTIVE PROGRAM FOR MICHIGAN

To recommend any one purely arbitrary preventive program for Michigan would be entirely outside the realm of this investigation, and so far as is apparent, there is no logical or scientific justification for such a procedure. The many aspects involved in the prevention of blindness vary in scope and definiteness and make a long list of problems to be coped with, defeating the possibility of setting any hard or fast rules. On the other hand, to be successful such a program must have for its aim the rectification of the evils which have been found contributory, and must include all of those activities of society that might help to retain sight. It should seek out the causes of blindness and eye hazards and advocate measures leading to the elimination of them. We have become convinced that the control of blindness depends largely upon early detection and the elimination of minor as well as major defects. It would be useless, however, to construct arguments proving the influence of primary environmental factors connected with blindness such as moral, educational, and economic insufficiency and then to organize a program directed entirely toward the elimination of disease.

In Michigan, a very desirable way of meeting the need for a state-wide preventive program would be the

creation of a separate, highly organized, state department supported by an adequate legislative appropriation. However desirable and practical such a plan might be, the present financial condition of the state could hardly be said to justify such an expenditure. In spite of this, the responsibility of the state can not be overlooked, leaving as the alternative, the organization of a program which could be integrated into related state and county programs already organized and functioning. Such a procedure would reduce to a minimum the financial assistance required of the state.

The following integrated preventive program should by no means be considered as authoritative, but rather as a suggested method of organization. In Michigan, such a program need not be confined wholly to any one department or board, but may be shared by many. Control should be centralized with the Michigan Department of Health as the directing unit, with the State Department of Social Welfare acting as a clearing house and source of information. Assisting, and directly responsible for the field work, would be the Michigan Department of Public Instruction and the Department of Labor and Industry. One representative from each of these four departments would constitute the active

commission, and maintain a well-trained staff whose principal responsibility would be in the field. The commission would also be responsible for obtaining adequate and uniform funds from the legislature.

Each county should be required to assume its share of the program in direct proportion to its financial condition. Such a requirement might be harmonized with Public Act 274 of 1913 as amended, which provides medical treatment for indigent afflicted children at state expense and Public Act 267 of 1915 which provides treatment for indigent adults at county expense. The duties of the field staff should be that of advising, assisting, and supervising the activities of the county units. In addition to this it would be the duty of the field staff to encourage the organization and cooperation of local voluntary groups within the communities. The value of such groups would be great, not only from the standpoint of the actual work they might do, but also for the public interest and approval they might create.

Such a program in Michigan should, whenever possible be integrated into the county health and county welfare programs already organized and functioning both to keep down the expense and to eliminate duplication of function and responsibility. Special at-

tention would be given to people residing in the sparsely populated areas, and mainly to those of lower economic and social status. In districts such as these, the lack of facilities and the amounts of ignorance and prejudice on the part of the population will be the greatest. Arrangements should be made to place the facilities of the more populous areas at the disposal of such less fortunate districts. In combating the congenital eye defects due to venereal diseases, anti-syphilitic treatment for every pregnant woman having syphilis should be required by law. Such treatment could be integrated into the county health programs at little or no extra cost as there already are 54 well-organized units responsible for functions of pre-natal and post-natal care. The program of education for the parents should include the remotest sections of the state and in many instances could be included in the already organized and financed W. P. A. Adult Education Program. Prevention of eye accidents must be stressed by radio, lectures, films, posters, and pamphlets. The public schools could be charged with the responsibility of the eyes during school age, and the teachers trained to recognize and guard against any eye weaknesses. Periodic eye examinations of all school children at the expense of the school district should be made compul-

sory by law. And finally, eye clinics and free eye examinations must be made available at county expense to all persons unable to pay for such services.

The combined efforts of these groups would be: first, an intensive study to obtain the maximum of information concerning the causes of blindness and methods of prevention. Second, a detailed survey of local conditions. Third, a direct and continued application of all knowledge of the local problem.

If these three steps were carried out efficiently, the results would doubtless show a definite decrease in the number of blind to be cared for by the state in the future. The whole question of the reduction of blindness hinges directly upon the extent to which the many causative factors may be located, and by combined effort eliminated or controlled. By ascertaining which causes are showing an increase, or a decrease, it may be learned which causes are capable of arrest and to what extent they have been arrested.

Although a great majority of the blind come from poverty-stricken homes in such straits as to require a maximum of service from all agencies, not all blindness is the result of insufficient incomes, conflicting moral codes, variable cultural standards, or ineffective laws. Like any other program to meet the needs of a widely scattered group, an effective preven-

tive program in Michigan must meet the diversified needs of both parents and children on a group basis depending upon need and type. For the higher types, education and special training will in most cases be sufficient. For the lower types, education and rehabilitation of the parents and the institutionalization of the blind child will probably be necessary. For the lowest types, education and any form of social adjustment may be impossible, leaving complete, and in many cases permanent segregation, the only alternative.

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A P P E N D I X

HOME RATING SCALE AS USED BY VISITING TEACHER AT MICHIGAN SCHOOL FOR THE BLIND

Types Of Homes

The home of each pupil in the Michigan School for the Blind is visited by the visiting teacher and rated as "Good", "Fair", or "Poor". The rating is based upon the following conditions: In order that a pupil's home may be rated as "Good", it must primarily be one in which the members of the family are integrated as a whole, each unit cooperating with the other units. It must be a family which will cooperate with the school and other agencies in dealing with the child's problems. It must be one which will aid in developing responsibility and self-respect in the blind child and help him to help himself.

In sufficient income is, in some cases, the primary cause of a home being rated as "Poor"; although in few families is there any single disorganizing factor, but rather a complexity of factors, all tending to have a bad influence upon the children. These influences are grouped by the visiting teacher into four general divisions, each with many subdivisions:

I. Family Relations
   (a) Dissention between parents
   (b) Unwanted child
   (c) Neglect
   (d) Over-solicitude
   (e) Over-severity

II. Social and Moral Relations
   (a) Foster home
   (b) Disgraced home
   (c) Broken home
   (d) Religious differences
   (e) Deserted home

III. Economic Difficulties
   (a) Poor management of incomes
   (b) Insufficient income
   (c) Mother working out as sole support
   (d) Unemployment

IV. Physical and Mental Disabilities
   (a) Chronic illness in home
   (b) Mental defect in either parent
   (c) Neurotic or psychotic parent

SCHEDULE

Name_____Grade_____Age_____

City_____Population_____County_____

Birthplace_____Race_____Sex_____
(State)

Type of Home_____Number in Family_____
(Good)(Fair)(Poor)

Home Relations_____
(Excellent)(Good)(Fair)(Poor)

Cause of Blindness_____

Lang.Used in the Home)_____ Others Blind in Family)(1) (2) (3) (4)
(Check)

Nationality or Descent)_____Church Preference_____

Amount of Vision_____
(Useful)(None)(Light Perception)(One Eye)

Lives With_____
(Parents)(Foster Parents)(Boarding)(Relatives)

Ward of Court_____ Parent-Child Relations)_____
(Yes)(No)

Birthplace of Mother_____Birthplace of Father_____

Marital Status of Parents:
Divorced_____Father Dead_____Mother Dead_____
Separated_____Father Left_____Mother Left_____
Both Living___Step-Father_____Step-Mother_____

Parents in Prison_____Otherwise_____
(1)Mother (2)Father

Parents in Any Other Institution_____
(Mother) (Father)

Occupation of Father_____
(Tell what he does.)

Common Labor_____Professional_____Farmer_____
Skilled Labor____Business_____W.P.A._____
Unemployed_____
(How long?)

Occupation of Mother_____
(Tell what she does outside of home)

Income of Father___Income of Mother___Total Income_____

Supported by_____


WAGENVOORD
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