

The Blind—Their Number and Characteristics

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AN ACCURATE ENUMERATION of the blind in the United States is not available. It is questionable whether such an enumeration could be made except through an elaborate case-finding method, since there is no precise and universally accepted definition of blindness, a lack which is undoubtedly in a measure responsible for the varied results of several attempts to enumerate the blind.

Efforts have been made to obtain a consensus on the extent of visual deficiency that an individual must have in order to be classed as blind. It has been agreed that the term cannot be restricted to persons who have no light perception whatsoever, but that it must include all whose vision is not sufficient for effective use. To define this larger group, various descriptive terms have been used, such as "economically," "vocationally," and "educationally" blind. The intent in broadening the concept of blindness is to include persons who may have enough vision to perceive light or motion but not to engage in normal everyday activities, such as attending school or following an occupation. In 1934 the American Medical Association, by resolution, adopted quantitative definitions of these terms as recommended by a committee appointed by the section on ophthalmology.¹

To the States participating in the Federal-State program of aid to the blind under the provisions of the Social Security Act, the Social Security Board has suggested a definition of economic blindness which conforms essentially to that adopted by the American Medical Association:

In terms of ophthalmic measurement, central visual acuity of 20/200 or less in the better eye with correcting glasses is generally considered as economic blindness. A field defect in which the peripheral field has contracted to such an extent that the widest diameter of visual field subtends at an angular distance of no greater than 20 degrees may be considered equally disabling.

This definition or one substantially similar is now used by most States with approved programs of aid to the blind, and it is used in this article.

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¹ "Proceedings of the House of Delegates of the American Medical Association," the Eighty-fifth Annual Session held at Cleveland, Ohio, June 11-15, 1934, p. 60.

Prevalence of Blindness in the United States

In terms of the definition adopted, the number of blind persons in our population is not known. The 1940 census did not enumerate the blind. Without any precise definition of blindness, the 1930 census attempted an enumeration and reported some 63,500 individuals as blind.² Enumerations made in a number of States or localities in the years preceding or following that census showed larger numbers of blind persons than were shown by the census.³

In the winter of 1935-36, the National Health Survey, in a house-to-house canvass of more than 25 million persons in 83 cities in 18 States, enumerated nearly 2,100 persons who were reported as blind in both eyes.⁴ When the rates obtained from this survey are applied to the total population in 1940 as given by the census, an estimate of more than 121,000 blind persons is obtained (table 1). The same rates give an estimated 126,000 for 1942. The National Health Survey, however, made no attempt to enumerate persons in institutions for the blind or blind persons in other institutions, such as homes for the aged, where the rate of blindness would be higher than in the general population. The estimates based on the Survey data should, therefore, be increased by at least the number of blind persons in institutions.⁵

It should be remembered that all enumerations like the National Health Survey or the census almost inevitably understate, for varying reasons, the number of persons with a particular physical defect such as blindness. There may have been failure to report blindness; the enumerator may

² Bureau of the Census, *The Blind and Deaf-Mutes in the United States, 1930*, Washington: The Bureau, 1931, p. 9.

³ Bost, Harry, *Blindness and the Blind in the United States*, New York: The Macmillan Company, 1934, pp. 169-170.

⁴ Britten, Rollo H., "Blindness, as Recorded in the National Health Survey . . ." *Public Health Reports*, Vol. 56, No. 46 (Nov. 14, 1941), pp. 2191-2215.

⁵ Britten, op. cit., pp. 2192-2193, states: "It may be assumed . . . that the cases of blindness (both eyes) recorded in the Health Survey represent persons who were totally blind or had vision sufficient merely to distinguish between light and dark. Even for this group the figures are to be considered a minimum, both because of the recognized incompleteness of data obtained in general studies of the character of the Health Survey and the exclusion of most institutional cases . . . There were 18 persons, blind in both eyes, recorded as being in institutions for the care of disease for the entire 12 months immediately preceding the visit."

Table 1.—Prevalence of blindness, by age group and sex, 1940, estimated from National Health Survey data

| Age group | Total | | Male | | Female | |
|------------------|-------------|---------------|------------|---------------|------------|---------------|
| | Population | Blind persons | Population | Blind persons | Population | Blind persons |
| Total..... | 131,669,275 | 121,382 | 66,061,592 | 63,876 | 65,607,683 | 57,507 |
| Under 5..... | 10,541,524 | 600 | 5,354,808 | 420 | 5,186,716 | 180 |
| 5-9..... | 10,684,622 | 1,159 | 5,418,823 | 585 | 5,265,799 | 574 |
| 10-14..... | 11,745,935 | 2,048 | 5,952,329 | 1,274 | 5,799,606 | 774 |
| 15-19..... | 12,333,523 | 1,524 | 6,180,153 | 997 | 6,153,370 | 527 |
| 20-24..... | 11,587,835 | 2,036 | 5,692,392 | 1,461 | 5,895,443 | 575 |
| 25-29..... | 11,096,638 | 2,738 | 5,450,662 | 1,813 | 5,645,976 | 925 |
| 30-34..... | 10,242,388 | 3,081 | 5,070,312 | 1,769 | 5,172,070 | 1,312 |
| 35-39..... | 9,545,377 | 4,110 | 4,745,659 | 2,560 | 4,799,718 | 1,550 |
| 40-44..... | 8,787,843 | 5,004 | 4,419,135 | 3,139 | 4,368,708 | 1,865 |
| 45-49..... | 8,255,225 | 6,694 | 4,209,269 | 3,914 | 4,045,956 | 2,780 |
| 50-54..... | 7,256,846 | 7,445 | 3,762,750 | 4,478 | 3,504,090 | 2,967 |
| 55-59..... | 5,843,865 | 9,857 | 3,011,364 | 6,184 | 2,832,501 | 3,673 |
| 60-64..... | 4,728,340 | 10,081 | 2,397,816 | 5,361 | 2,330,524 | 4,720 |
| 65-69..... | 3,805,657 | 13,531 | 1,896,088 | 7,606 | 1,910,569 | 5,925 |
| 70-74..... | 2,569,532 | 16,031 | 1,270,967 | 8,954 | 1,298,565 | 7,077 |
| 75-84..... | 2,267,619 | 24,577 | 1,080,997 | 10,183 | 1,186,622 | 14,394 |
| 85 and over..... | 375,506 | 10,866 | 158,068 | 3,177 | 217,438 | 7,689 |

Source: Population from Bureau of the Census, *Sixteenth Census of the United States: 1940*; prevalence based on age and sex rates from unpublished data furnished by U. S. Public Health Service and *Public Health Reports*, Vol. 56, No. 46 (Nov. 14, 1941), p. 2193, table 4.

have forgotten to ask the question about it; the term may have been misunderstood, since many people assume that the blind are only persons with no light perception at all; there may have been reluctance to label a person as blind, especially if there was a real or fancied hope that the condition might improve; or the omission may have been inadvertent, especially if the person in question was a boarder or other nonrelated member of the household.

The National Health Survey enumerated partially blind persons separately from those blind in both eyes, the group under consideration in this discussion. The instruction given the enumerators was: "If a person is blind, indicate whether the blindness is in one eye or in both eyes by entering 'Yes' in one of the two allotted spaces. Do not ask if anyone is partially blind, but enter it (indicating by 'Yes' in the allotted space) when that information is voluntarily given you. Defective vision, unless causing almost complete blindness, is not included."⁶ In these circumstances there was little possibility of over-enumerating the blind in terms of the concept adopted in this discussion, but there was a strong likelihood that many who would have been considered blind on the basis of that definition were reported among the partially blind.

⁶ U. S. Public Health Service, *Manual of Instructions for Enumerators—Health Survey*, H. S. Form 14, Oct. 7, 1935, p. 34.

The National Health Survey enumeration may have had other important limitations. Although the survey included 23 predominantly rural counties, the sample from which data on the blind were derived was restricted to urban areas, where the rate of blindness appears to be less than in rural areas. The 23 counties were all in Georgia, Missouri, or Michigan and included less than 150,000 individuals; they could not therefore be considered representative of the rural areas for the country at large.⁷ Perhaps it is significant, however, that in each of these three States the rural population canvassed showed a higher rate of blindness than the total urban sample—109, 157, and 100 per 100,000 population for the rural counties in Michigan, Missouri, and Georgia, respectively, as compared with 83 for the urban sample.

There is other fragmentary evidence that the rate of blindness may be appreciably higher in rural than in urban areas. The 1930 census, for example, showed on the whole a higher rate in the predominantly rural States than in many urban States. In 66 cities of 100,000 or more population, moreover, the rate of blindness per unit of population was less than for the country as a whole; in only 32 cities of this size was the rate higher, despite the fact that many institutions for the blind and the aged are found within municipal areas, and that reporting of the blind is likely to be more complete in cities than in sparsely populated rural areas.

Two other crude measures of relative frequency of blindness in urban and rural areas can be derived from the 1930 census. In 20 States with cities of 100,000 or more population, the rate of blindness was lower in these cities than in the rest of the State; in 11 States with cities of 100,000 or more, the rate of blindness was higher in those cities than in the rest of the State; and in 1 State the rates were identical. The combined 1930 population of all cities of 100,000 or more accounted for 36,325,736 persons of whom 14,513 were enumerated as blind, giving a rate of 40 per 100,000 population. The corresponding rate for the rest of the country was 57.

Related closely to the urban-rural composition of the National Health Survey sample is its racial composition. Since the sample was restricted largely to urban areas, it failed to include a pro-

⁷ The urban sample included more than 700,000 households and more than 2.5 million individuals.

portionate representation of Negroes. In addition, Negroes were included with the white group in cities with small Negro populations. For the entire urban sample, the rates for the white and the Negro groups were 76 and 146 per 100,000, respectively—a 1 to 2 ratio. In the South, however, where Negroes were always enumerated separately, the rates were 74 and 217—a 1 to 3 ratio, and the differential was greatest in cities with populations of 25,000–100,000 (table 2).⁸

Census data for 1920 and 1930 also indicate a lower prevalence of blindness among the white population (including Mexicans) than among the nonwhite (table 3). The rates are 1.25 and 1.57 times higher for Negroes and 4.17 and 4.18 times higher for Indians than for the white groups in 1920 and 1930, respectively. For other nonwhite populations, the comparative rates are widely different for 1920 and 1930—0.42 and 1.42, respectively. The rate for Mexicans, given separately in the 1930 census, was 1.15 times that of the white population. In 1920, the rate for native white was somewhat lower than for the foreign born.

A sectional variation in the white-Negro differences in prevalence of blindness is also evident from census data, but unlike the findings of the

⁸ Britten, op. cit., pp. 2205–2207, tables 12 and 13.

Table 2.—Rate of blindness per 100,000 population, by geographic division, size of city,¹ race, and sex, 1935–36

| Geographic division and race | Rate | | | Size of city ¹ and race | Rate | | |
|------------------------------|--|------|--------|--|-------|------|--------|
| | Total | Male | Female | | Total | Male | Female |
| South: | | | | 100,000 or more: | | | |
| White..... | 74 | 76 | 72 | White..... | 74 | 78 | 68 |
| Negro ² | 217 | 267 | 183 | Negro ² | 104 | 225 | 108 |
| Northeast: | | | | 25,000–100,000: | | | |
| White..... | 70 | 74 | 65 | White..... | 66 | 66 | 67 |
| Negro ² | 162 | 170 | 131 | Negro ² | 232 | 309 | 172 |
| North Central: | | | | Less than 25,000: | | | |
| White..... | 81 | 88 | 73 | White..... | 89 | 81 | 94 |
| Negro ² | 207 | 245 | 167 | Negro ² | 272 | 303 | 245 |
| | Ratio of Negro to white rate (white=100) | | | Ratio of Negro to white rate (white=100) | | | |
| South..... | 293 | 343 | 254 | 100,000 or more..... | 262 | 288 | 247 |
| Northeast..... | 217 | 238 | 202 | 25,000–100,000..... | 352 | 408 | 257 |
| North Central..... | 250 | 278 | 220 | Less than 25,000..... | 306 | 374 | 261 |

¹ South only.

² Includes small proportion of members of other races.

Source: Britten, Rollo H., "Blindness as Recorded in the National Health Survey . . .," *Public Health Reports*, Vol. 56, No. 46 (Nov. 14, 1941), pp. 2206–2207, tables 12 and 13.

Table 3.—Prevalence of blindness and rate per 100,000 population, by race and sex, 1930 and 1920

| Race | Blind persons | | | Rate | | |
|--------------------------|---------------|--------|--------|------------------|------------------|------------------|
| | Total | Male | Female | Total | Male | Female |
| 1930 | | | | | | |
| Total..... | 63,489 | 36,520 | 26,969 | 52 | 59 | 44 |
| White ¹ | 63,645 | 30,723 | 22,922 | 49 | 55 | 42 |
| Negro..... | 9,128 | 5,395 | 3,733 | 77 | 92 | 62 |
| Indian..... | 681 | 380 | 301 | 205 | 223 | 186 |
| Other..... | 35 | 31 | 4 | (²) | (²) | (²) |
| 1920 | | | | | | |
| Total..... | 52,567 | 30,160 | 22,407 | 50 | 56 | 43 |
| White ¹ | 45,737 | 26,133 | 19,064 | 48 | 54 | 42 |
| Negro..... | 6,302 | 3,742 | 2,560 | 60 | 72 | 49 |
| Indian..... | 488 | 252 | 236 | 200 | 201 | 198 |
| Other..... | 40 | 33 | 7 | (²) | (²) | (²) |

¹ Includes Mexicans.

² Not computed because of small number of cases.

Source: Bureau of the Census, *The Blind and Deaf-Mutes in the United States, 1930*, p. 15, table 5, and *The Blind in the United States, 1920*, p. 17, table 4.

National Health Survey the differential is not particularly high in the South. The highest differential occurs in the West North Central States, where the ratio approximates 1 to 3; the next highest is found in the Pacific and Mountain States, in all of which the ratio is greater than 1 to 2. From these evidences it may be concluded that some 20 percent of the blind population, i. e., 25,000–30,000, are Negroes, and that the rate of blindness for Negroes is at least twice that for the white population.

The limitations in the National Health Survey due to the nature of the sample, the exclusion of the institutional population, and incomplete reporting inherent in any canvass of this type indicate the need of marked upward correction of the returns to approximate the number of blind persons in our population. Corrections for under-enumeration resulting from these factors would probably raise the estimated number to some 160,000. The under-enumeration attributable to the more restricted definition of blindness may quite probably represent one-fourth to one-third of the reported total. In other words, the aggregate number of blind in the United States in 1940 may have been approximately 215,000 to 240,000.

However, as late as 1939, Harry Best, an authority on the subject of blindness, placed the total number of blind at about 110,000.⁹ In

⁹ Best, Harry, "Blindness: Definition and Statistics," *American Sociological Review*, Vol. 4, No. 4 (August 1939), p. 483.

selecting this figure Professor Best was probably relying primarily on the estimate made by Kenneth W. Revell, a member of the Health Survey staff.¹⁰ Mr. Revell himself considered 117,000 as the minimum estimate of the blind in the United States; his estimate was presumably obtained by applying the prevalence rate found by the National Health Survey to the population at large and adding 10,000 to represent the number in institutions for the blind.

On the basis of our definition, an estimate of 110,000 blind must be rejected as too low on several scores. First, a proper use of the findings of the National Health Survey, without any correction, gives an estimate considerably in excess of 110,000; for 1940 this number was more than 121,000. It has already been pointed out, however, that even this number is unduly low and requires upward correction.

The number of blind persons in receipt of public assistance of one form or another equals some 100,000 or possibly 110,000. In January of this year 79,000 persons were receiving aid to the blind

¹⁰ U. S. Public Health Service, National Institute of Health, *Blindness—Amount, Causes and Relation to Certain Social Factors* (Preliminary Reports, Sickness and Medical Care Series), Bulletin 10, 1938, pp. 1-2.

in the continental United States.¹¹ In addition, an appreciable number of blind persons aged 65 and over and others under 18 years of age receive assistance as aged individuals and as dependent children; still others are not in receipt of assistance but are being cared for by parents or relatives or are in institutions for the blind, the aged, and the chronically ill. Moreover, it cannot be assumed that all the adult blind are dependent on public resources. Registrations of the blind maintained in some States in connection with administering the aid to the blind program indicate that a substantial number of the blind are not eligible for aid, either because of their own resources or because they have relatives who are at least legally responsible for their maintenance.

There is supporting evidence for placing the number of blind in the general magnitude of 215,000 to 240,000. In connection with estimating the number of disabled persons in the population, the author made inquiry in 1938 of various national organizations for the blind concerning available estimates of the number of blind persons. After considerable exploration of the problem, it was concluded from those data that the rate of

¹¹ *Social Security Bulletin*, Vol. 6, No. 3 (March 1943), p. 60.

Table 4.—Estimated total number of blind persons and percentage distribution by age group, by sex,¹ 1942

| Age group | Distribution based on 1930 census enumeration of the blind | | | | | | Distribution based on National Health Survey enumeration of the blind | | | | | |
|------------------|--|-------------------------|-----------------------------------|-------------------------|-----------------------------------|-------------------------|---|-------------------------|-----------------------------------|-------------------------|-----------------------------------|-------------------------|
| | Total | | Male | | Female | | Total | | Male | | Female | |
| | Estimated number of blind persons | Percentage distribution | Estimated number of blind persons | Percentage distribution | Estimated number of blind persons | Percentage distribution | Estimated number of blind persons | Percentage distribution | Estimated number of blind persons | Percentage distribution | Estimated number of blind persons | Percentage distribution |
| Total..... | 230,000 | 100.0 | 128,860 | 100.0 | 101,140 | 100.0 | 230,000 | 100.0 | 120,350 | 100.0 | 109,641 | 100.0 |
| Under 5..... | 1,311 | .6 | 737 | .6 | 574 | .6 | 1,094 | .5 | 700 | .6 | 328 | .3 |
| 5-9..... | 2,683 | 1.2 | 1,552 | 1.2 | 1,131 | 1.1 | 2,112 | .9 | 1,065 | .9 | 1,047 | 1.0 |
| 10-14..... | 4,800 | 2.1 | 2,784 | 2.1 | 2,016 | 2.0 | 3,574 | 1.6 | 2,224 | 1.9 | 1,350 | 1.2 |
| 15-19..... | 5,989 | 2.6 | 3,481 | 2.7 | 2,508 | 2.5 | 2,704 | 1.2 | 1,771 | 1.6 | 933 | .8 |
| 20-24..... | 5,984 | 2.6 | 3,605 | 2.8 | 2,379 | 2.4 | 3,761 | 1.6 | 2,692 | 2.2 | 1,059 | 1.0 |
| 25-29..... | 6,287 | 2.7 | 3,773 | 2.9 | 2,514 | 2.5 | 5,042 | 2.2 | 3,351 | 2.8 | 1,691 | 1.5 |
| 30-34..... | 7,364 | 3.2 | 4,678 | 3.6 | 2,686 | 2.7 | 5,722 | 2.5 | 3,307 | 2.7 | 2,415 | 2.2 |
| 35-39..... | 8,185 | 3.6 | 5,081 | 3.9 | 3,084 | 3.0 | 7,738 | 3.4 | 4,812 | 4.0 | 2,926 | 2.7 |
| 40-44..... | 9,743 | 4.2 | 6,060 | 4.7 | 3,683 | 3.6 | 9,281 | 4.0 | 5,798 | 4.8 | 3,483 | 3.2 |
| 45-49..... | 11,958 | 5.2 | 7,499 | 5.8 | 4,459 | 4.4 | 11,985 | 5.2 | 6,965 | 5.8 | 5,020 | 4.6 |
| 50-54..... | 15,673 | 6.8 | 9,777 | 7.6 | 5,896 | 5.8 | 14,142 | 6.1 | 8,447 | 7.0 | 5,695 | 5.2 |
| 55-59..... | 16,567 | 7.2 | 10,204 | 7.9 | 6,363 | 6.3 | 18,644 | 8.1 | 11,588 | 9.6 | 6,956 | 6.3 |
| 60-64..... | 19,140 | 8.3 | 11,410 | 8.9 | 7,730 | 7.6 | 19,133 | 8.3 | 10,127 | 8.4 | 9,006 | 8.2 |
| 65-69..... | 24,097 | 10.5 | 13,331 | 10.4 | 10,766 | 10.6 | 26,461 | 11.5 | 14,833 | 12.3 | 11,628 | 10.6 |
| 70-74..... | 25,321 | 11.0 | 13,590 | 10.6 | 11,731 | 11.6 | 30,380 | 13.2 | 16,936 | 14.1 | 13,444 | 12.3 |
| 75-84..... | 45,295 | 19.7 | 22,677 | 17.6 | 22,618 | 22.4 | 47,158 | 20.5 | 19,447 | 16.2 | 27,711 | 25.3 |
| 85 and over..... | 19,643 | 8.6 | 8,663 | 6.7 | 10,980 | 10.9 | 21,179 | 9.2 | 6,230 | 5.2 | 14,949 | 13.6 |

¹ To obtain distributions, the age and sex rates from the 1930 census and the National Health Survey were applied to estimated population in 1942 and then prorated to equal the estimate of 230,000 blind persons used in this article.

Source: Bureau of the Census, *The Blind and Deaf-Mutes in the United States, 1930*, p. 16, table 5, and *Fifteenth Census of the United States, 1930*, Vol. II, p. 576. National Health Survey age and sex rates obtained from unpublished data furnished by U. S. Public Health Service, and from *Public Health Reports*, Vol. 66, No. 46 (Nov. 14, 1941), p. 2196, table 4.

blindness in our population was 1.5 per 1,000, which would give for 1940 a total of nearly 200,000 blind persons in the population. An article in the 1941 *Social Work Year Book*¹² estimates the number of blind in the United States at between 200,000 and 250,000, or approximately 1.5 to 2.0 per 1,000; this estimate is based on State-wide surveys and statistics showing the number of blind persons on State assistance rolls, which are considered to give a better basis than existing census data for estimating prevalence. Finally, Ralph G. Hurlin, Director of the Department of Statistics of the Russell Sage Foundation and for years a member of the Committee on Statistics for the Blind, in estimates for that committee places the number of the blind at approximately 230,000.¹³ This estimate, corroborating closely those given above, has been adopted as the best approximation of the number of blind in this country.¹⁴

Characteristics of the Blind

In appraising the social and economic consequences of blindness it is necessary to know not only the number of blind persons in the population but also the characteristics of these individuals, such as age, sex, and capacity to engage in work or other productive activities. Although reliable information on characteristics of the blind is not available, an approximate knowledge of some of their characteristics may be deduced from analyses of the census and National Health Survey material. Also, some information concerning certain characteristics may be obtained from a study of recipients of aid to the blind.

Age and sex.—On the basis of the 1930 census returns, corrected to allow for changes in the age-sex composition of the population since that date, it is found that more than three-fourths of the estimated 230,000 blind persons are in ages 45 and over and about half are in ages 65 and over (table 4). The age and sex distribution of the blind derived from the National Health Survey data indicates more than four-fifths in ages 45 and over and more than half in ages 65 and over.

¹² "Blindness and Conservation of Sight," *Social Work Year Book, 1941*, New York: Russell Sage Foundation, 1941, p. 76.

¹³ Unpublished data.

¹⁴ Another available estimate, 263,000 blind in 1940, is provided by the National Society for the Blind. They assume a uniform rate of blindness—2 per 1,000 of general population—in different States, an assumption which seems untenable. *Reasons for the Amendment to the Randolph-Sheppard Act and Evidence Supporting Its Practicability and Need*, compiled by Lawrence Q. Lewis, Washington: National Society for the Blind, 1941, p. 136.

Table 5.—Rate of blindness per 100,000 population and percentage distribution by relief and income status, 1935-36

| Relief and income status | Rate | Percentage distribution |
|--------------------------|------|-------------------------|
| Total..... | 83 | 100.0 |
| Relief..... | 163 | 81.2 |
| Nonrelief: | | |
| Less than \$1,000..... | 110 | 37.1 |
| 1,000-1,499..... | 59 | 14.4 |
| 1,500-1,999..... | 63 | 9.3 |
| 2,000-2,999..... | 41 | 5.8 |
| 3,000-4,999..... | 27 | 1.6 |
| 5,000 or more..... | 33 | 1.1 |

Source: Britton, Rollo H., "Blindness as Recorded in the National Health Survey . . ." *Public Health Reports*, Vol. 55, No. 46 (Nov. 14, 1941), p. 2209, tables 16 and 17.

From the nature of the limitations of both these enumerations, there is reason to believe that underenumeration was probably more marked among the aged, the very young, and girls in the late teens and twenties than among individuals in the intermediate ages. It may be assumed, therefore, that the true age distribution of the blind would show a somewhat higher proportion of blind individuals, especially females in ages under 30, and of both sexes in ages under 5,¹⁵ than is indicated in table 4; a lesser proportion in the intermediate ages; but a higher proportion in ages 65 and over. It is reasonable to assume, therefore, that at least 80 percent of the blind are over 45 years of age and 55-60 percent are 65 years of age or over.

Both the census and the National Health Survey enumerations indicate proportionately more males than females among the blind. According to the census, 44 percent of the blind are females; according to the National Health Survey, about 48 percent. If, however, it is correct to assume that the enumerations of the blind tend to understate most markedly the number among the aged, in which there is a larger proportion of women than men, and among girls in the teens and twenties, then it may be inferred that the actual prevalence of blindness among females would approximate more closely that among males than is indicated by these enumerations.¹⁶ Of course,

¹⁵ The reduction in the rate of blindness at birth, which has been particularly marked in recent years, may be offsetting in part the effect of underenumeration of the blind in the early ages.

¹⁶ It is significant that the National Health Survey shows a prevalence rate for females in ages 15-24 which is only 42 percent of that for males. The corresponding percentage for ages under 15 is 69, rising progressively with age, so that for ages 75 and over the rate is considerably higher for females than for males. These variations suggest that in early adulthood, especially in ages 15-24, the relative under-reporting of blindness for females is more marked than for males.

the age distribution of the blind for the two sexes may be appreciably different, since industrial blindness is much more common among men than women. With progressive reduction in the incidence of blindness at birth and early infancy, it is conceivable that the higher rate of industrial blindness among males may in the future be a more predominant factor in causing a higher prevalence rate of blindness among males than among females.

Marital status.—Information on marital status of the blind is not available from the National Health Survey or from the 1930 census. In connection with the 1920 census, the Bureau of the Census sent questionnaires to all the blind reported by the enumerators, by schools of the blind, and by other sources. Of the 52,567 blind to whom questionnaires were sent, 40,913 replied. The percentage distribution by marital status of those in ages 15 and over who reported was as follows:

| Marital Status | Males | Females |
|-----------------|-------|---------|
| Single..... | 33.0 | 34.5 |
| Married..... | 44.4 | 36.6 |
| Widowed..... | 17.9 | 25.0 |
| Divorced..... | 2.3 | 1.8 |
| Not stated..... | 1.6 | 1.6 |

Because of changes since 1920 in the composition of our population, particularly the blind population, these percentages would be appreciably different at the present time. Moreover, those who replied to the questionnaire cannot be assumed to have been a representative sample of the blind population at that time. These percentages must therefore be regarded as, at best, only suggestive. It would seem that the present distribution by marital status might be more nearly as follows:

| Marital Status | Males | Females |
|----------------|-------|---------|
| Single..... | 35 | 40 |
| Married..... | 35 | 20 |
| Widowed..... | 25 | 38 |
| Divorced..... | 5 | 2 |

Whether these hypothetical percentages or those given by the census are accepted, it is apparent that the proportion of married among the blind is much lower than in a comparable group of persons with normal sight. For social and economic reasons, opportunities for marriage are obviously

Table 6.—Number and percentage distribution of blind persons 10 years of age and over by economic status, by sex, 1920

| Economic status | Number of blind persons | | | Percentage distribution | | |
|--|-------------------------|--------|--------|-------------------------|-------|--------|
| | Total | Male | Female | Total | Male | Female |
| Total..... | 39,636 | 23,261 | 16,375 | 100.0 | 100.0 | 100.0 |
| Not gainfully employed..... | 32,459 | 17,344 | 15,115 | 81.9 | 74.6 | 92.2 |
| Gainfully employed..... | 7,177 | 5,917 | 1,270 | 18.1 | 25.4 | 7.8 |
| Self-supporting..... | 3,019 | 2,050 | 969 | 42.1 | 44.9 | 29.1 |
| Not self-supporting..... | 3,030 | 3,088 | 842 | 54.7 | 62.3 | 68.3 |
| Not reporting ability to support self..... | 228 | 100 | 50 | 3.2 | 2.8 | 4.6 |
| Dependent on occupation..... | 5,392 | 4,642 | 750 | 75.1 | 78.0 | 59.1 |
| Not dependent on occupation..... | 1,665 | 1,118 | 447 | 21.8 | 18.9 | 35.2 |
| Not reporting dependence on occupation..... | 220 | 147 | 73 | 3.1 | 2.5 | 5.7 |
| Reporting annual earnings from occupation..... | 5,015 | 4,143 | 872 | 69.0 | 70.1 | 68.7 |
| Less than \$100..... | 805 | 530 | 335 | 12.1 | 9.0 | 26.4 |
| 100-199..... | 715 | 585 | 130 | 10.0 | 9.9 | 10.2 |
| 200-299..... | 560 | 482 | 78 | 7.8 | 8.2 | 6.1 |
| 300-399..... | 583 | 475 | 108 | 8.1 | 8.0 | 8.6 |
| 400-499..... | 352 | 300 | 52 | 4.9 | 3.1 | 4.1 |
| 500-599..... | 406 | 362 | 44 | 5.7 | 6.1 | 3.5 |
| 600-799..... | 453 | 401 | 49 | 6.3 | 6.8 | 3.9 |
| 800-999..... | 319 | 284 | 35 | 4.4 | 4.8 | 2.8 |
| 1,000-1,199..... | 239 | 217 | 22 | 3.3 | 3.7 | 1.7 |
| 1,200-1,499..... | 163 | 153 | 10 | 2.3 | 2.0 | .8 |
| 1,500 or more..... | 360 | 351 | 9 | 5.0 | 5.0 | .7 |
| Not reporting annual earnings from occupation..... | 2,162 | 1,764 | 398 | 30.1 | 20.9 | 31.3 |
| Self-supporting..... | 856 | 750 | 106 | 11.9 | 12.7 | 8.3 |
| Not self-supporting..... | 1,165 | 898 | 267 | 16.2 | 15.2 | 21.0 |
| Not reporting ability to support self..... | 141 | 116 | 25 | 2.0 | 2.0 | 2.0 |

Source: Bureau of the Census, *The Blind in the United States: 1920*, pp. 70-73, tables 36 and 37.

more restricted among the blind; separation and divorce may be more likely if blindness occurs subsequent to marriage; and some blind persons may be reluctant to marry because of eugenic or other considerations. All these factors, as well as the concentration of the blind in the older ages, contribute to the different marital composition of the blind population.

Economic status.—The National Health Survey indicates that blindness, like other types of physical handicap, is most prevalent among the groups least favored economically (table 5). For the relief population,¹⁷ a rate of blindness of 163 per 100,000 population was found. The rate for persons in nonrelief families with incomes of less than \$1,000 per year was 110; for those in families with incomes of \$1,000-1,500 the rate was 59, gradually decreasing to 33 in families with incomes of \$5,000 or more.

The Survey also showed that nearly one-third of the blind were in families on relief in the winter of

¹⁷ A family was classed as on relief if any of its members had received relief at any time in the 12 months preceding the date of the canvass.

1935-36; more than a third were in families not on relief but with annual incomes of less than \$1,000; 14 percent were in families with incomes of \$1,000-1,500; and the families of less than 3 percent had incomes of \$3,000 or more.

In view of the fact that the findings refer to family income, they are essentially in accord with data presented by Harry Best¹⁸ from a study of blind persons in Minnesota in 1923; that study indicated that some 48 percent of the males and 36 percent of the females were partly or wholly self-supporting. Ruth F. Sargent attempted to follow up 500 children who left the Pennsylvania Institution for the Instruction of the Blind during the years 1907-22.¹⁹ She obtained direct replies from 185 and information from other sources about an additional 152. Nearly 54 percent of the 337 were self-supporting. The fact that these persons attended school indicates that they were a selected group, both in intelligence and in economic standing. Moreover, since a substantial number of cases were not heard from, it is reasonable to infer that there was some selective reporting, i. e., the poorest ones did not reply. The percentage of self-support is therefore probably higher for this sample than generally for persons who are born blind or who become blind in their early youth.

On the whole, available information indicates that between one-half and two-thirds of the estimated 230,000 blind are needy. There is reason to believe that about 50 percent are in receipt of some form of public assistance or are being cared for in public institutions. In addition, some of the blind, though not self-supporting, are being cared for by parents or other relatives. There are probably others who, though needy, are not receiving public assistance primarily because of limited funds in certain States, or because they have relatives legally responsible for their care and are therefore not eligible for public assistance.

Employment status.—Closely associated with the economic status of the blind is their employment status. The census for 1920 indicated that 25 percent of the males and 8 percent of the females 10 years of age and over who responded to the special questionnaire were gainfully employed (table 6). The returns from the 1910 census were not materially different. The National Health

Survey found 19 percent of the male and 2 percent of the female blind actually employed in the winter of 1935-36. These findings are not inconsistent with the findings of the census, since the latter information was restricted to persons who replied to the questionnaire. Moreover, during a period of extensive unemployment, proportionately fewer blind are likely to be gainfully employed than in normal times. In various studies dealing with the physical characteristics of the unemployed, 20-30 percent of the relief population of working age have been found to be seriously handicapped.

Aside from the fact that only a small proportion of the blind are gainfully occupied, their earnings average substantially less than the earnings of able-bodied individuals. According to the 1920 census, the median annual earnings of blind workers amounted to \$400 for males and \$178 for females. Substantiating the preceding discussion concerning the economic status of the blind, these facts indicate that, even in normal times, only about 15-20 percent of the blind can be regarded as able to provide for themselves through current earnings. Perhaps another 10-15 percent are supported by parents or other relatives, and an additional 15-20 percent who became blind late in life may have savings or other reserves. The others, who even in normal years must number about half the total group, are dependent on assistance of one form or another.

Intelligence.—A number of studies, summarized by Pintner and his associates,²⁰ have been made to determine the intelligence and learning ability of the blind. The weight of available data indicates a higher proportion of dull and feeble-minded cases among blind persons, though the proportion with superior intelligence is not appreciably smaller than among sighted individuals. This finding is on the whole consistent with expectations, since some causes of blindness are preventable and occur much less frequently among the more intelligent groups of the population. Available studies also indicate that, grade for grade, the blind have educational attainment comparable to the seeing, but the fact that the blind in a given grade are considerably older connotes some educational

¹⁸ *Blindness and the Blind*, op. cit., appendix A, p. 680, table 20.

¹⁹ Sargent, Ruth F., *What Can the Blind Do? A Study of 500 Former Pupils of the Pennsylvania Institution for the Instruction of the Blind*, Overbrook, Pa.: The Institute, Publication No. 3, 1924, 31 pp.

²⁰ Pintner, Rudolph; Eisenson, Jon; and Stanton, Mildred, *The Psychology of the Physically Handicapped*, New York, 1941, chapter 7, pp. 207-261. The conclusions reached by these authors are essentially borne out by another recent study, *Contributions to a Psychology of Blindness*, by Samuel Perkins Hayes, American Foundation for the Blind, Inc., New York, 1941, 296 pp.

retardation. Such a finding is not surprising, in view of their physical handicap, lower average intelligence, and the limitations imposed by the use of Braille.

Studies of special abilities of the blind do not support, by and large, the early popular belief that the blind have special acuity of other senses. On the whole, what superior performance they have can easily be accounted for in terms of use and exercise rather than acuity of other senses.

Characteristics of the Blind in General and Those Accepted for Public Assistance

Although information is not available with respect to the characteristics of persons receiving aid to the blind,²¹ data are available on certain characteristics of applicants accepted for assistance during the fiscal years 1937-38 through 1939-40 in States collaborating in this program under the Social Security Act (table 7). These characteristics are compared in table 8 with those of the blind in general.

Age.—The proportion of blind persons under 15 years of age was smaller among applicants accepted for assistance than among those recorded by the censuses and the National Health Survey. Similarly, there were proportionately fewer applicants aged 15-19 than were found in the census enumerations, but slightly more than were found in the National Health Survey. The fact that the institutionalized blind were omitted from the latter must be considered to affect its findings on individuals of school age. The difference between the proportion of applicants under age 20 who are accepted for aid to the blind and the proportion of the general blind population in those ages can be explained largely by the relatively small number of blind children and youths who need to apply for public assistance; most of them are either cared for by parents or other relatives or are in institutions. Moreover, some of the blind children under 18 on the assistance rolls are receiving aid to dependent children rather than aid to the blind.

The only other age group in which a smaller proportion of blind persons is found among those accepted for assistance than in the general population is the group 65 years of age and over. Some of this difference arises from the fact that a

²¹ A monograph, "Causes of Blindness Among Recipients of Aid to the Blind," dealing with blind recipients in 20 States is now in preparation and is scheduled for early issue by the Social Security Board.

Table 7.—Number and percentage distribution of applicants accepted for aid to the blind in States with plans approved by the Social Security Board, by selected characteristic, fiscal years 1937-38—1939-40¹

| Characteristic | Applicants accepted during fiscal year | | | | | | | |
|---|--|---------|---------|---------|-------------------------|---------|---------|---------|
| | Number | | | | Percentage distribution | | | |
| | Total | 1937-38 | 1938-39 | 1939-40 | Total | 1937-38 | 1938-39 | 1939-40 |
| <i>Number of States reporting</i> | | 30 | 48 | 43 | | 30 | 48 | 43 |
| Total..... | 38,184 | 18,650 | 11,181 | 8,453 | 100.0 | 100.0 | 100.0 | 100.0 |
| AGE | | | | | | | | |
| Under 16..... | 250 | 64 | 110 | 67 | .7 | .3 | 1.1 | .8 |
| 16-20..... | 702 | 275 | 230 | 188 | 1.8 | 1.5 | 2.1 | 2.2 |
| 21-44..... | 8,878 | 4,676 | 2,452 | 1,751 | 23.4 | 25.4 | 22.1 | 20.8 |
| 45-64..... | 16,073 | 7,040 | 4,506 | 3,627 | 42.3 | 43.0 | 40.6 | 43.0 |
| 65 and over..... | 12,083 | 6,404 | 3,703 | 2,706 | 31.8 | 29.8 | 34.1 | 33.2 |
| Unknown..... | 108 | 102 | 72 | 24 | | | | |
| SEX | | | | | | | | |
| Male..... | 22,580 | 11,154 | 6,563 | 4,872 | 59.2 | 60.1 | 58.7 | 57.6 |
| Female..... | 15,605 | 7,306 | 4,618 | 3,581 | 40.8 | 39.9 | 41.3 | 42.4 |
| RACE | | | | | | | | |
| White..... | 28,665 | 13,677 | 8,370 | 6,618 | 75.1 | 73.7 | 74.8 | 78.3 |
| Negro..... | 8,858 | 4,575 | 2,604 | 1,070 | 23.2 | 24.7 | 23.3 | 19.0 |
| Other..... | 661 | 268 | 207 | 166 | 1.7 | 1.6 | 1.9 | 1.8 |
| EMPLOYMENT STATUS | | | | | | | | |
| Gainfully employed..... | 2,161 | 1,247 | 520 | 388 | 5.7 | 6.7 | 4.7 | 4.6 |
| Sheltered employment..... | 406 | 262 | 61 | 80 | 1.1 | 1.4 | .6 | 1.0 |
| Self-employment..... | 1,087 | 618 | 274 | 105 | 2.9 | 3.3 | 2.4 | 2.3 |
| Other employment..... | 668 | 367 | 188 | 113 | 1.7 | 2.0 | 1.7 | 1.3 |
| Not gainfully employed..... | 36,023 | 17,303 | 10,658 | 8,065 | 94.3 | 93.3 | 95.3 | 95.4 |

¹ Excludes Pennsylvania, which had an approved plan only during first part of 1937-38.

substantial number of blind persons receive old-age assistance rather than aid to the blind. Another factor is the possibility that persons who become blind when they are near or past age 65 have accumulated greater resources of their own than have persons who are blind from birth or from their early years.

Sex.—Relatively more men are found in the assistance group than in the National Health Survey or even in the census. Assuming that dependency among persons who are born blind or become blind early in life may be as great among men as among women, an explanation of the preponderance of men on the assistance rolls might lie in the fact that more men than women become blind and dependent in the middle years from industrial hazards and other causes. It is also possible that parents and other relatives are more willing to provide care for women than for men.

Race.—The relative number of Negroes was considerably higher among applicants accepted

for assistance than among the blind in the general population. The difference is not surprising, however. As has been indicated, enumerations like the census and the National Health Survey tend to understate the prevalence of blindness among the Negro population. The major reason for the higher proportion of Negroes in the assistance group is, however, their generally lower economic status. Moreover, the fact that, by and large, States with a high proportion of Negroes in the population had no well-developed State program for aid to the blind before the Social Security Act was passed undoubtedly contributes toward the greater representation of Negroes among applicants accepted after the Federal act went into effect.

Marital status.—The proportion of married persons was about the same among persons accepted for aid to the blind and the blind individuals enumerated by the 1920 census. There was also little difference in the relative numbers of widowed. A sharp discrepancy occurs in the proportion reported as single and those divorced or separated. The smaller proportion of single persons in the assistance group as compared with the general blind population can be explained by the relatively small number of persons under age 20 who are receiving aid to the blind. For the divorced and separated, the discrepancy is probably attributable in part to more accurate information obtained on marital status of persons accepted for assistance. The census understates the number of divorced, and generally enumerates as married those persons who are separated. It is possible also that the occurrence of blindness and the consequent economic insecurity may themselves contribute to the disintegration of the family; in the case of families where there was no dependency, separation or divorce may have caused dependency for one or both of the partners involved. To a lesser extent than in the case of single persons, the difference in age composition of the two groups also contributes to the divergence in marital status.

Employment status.—As was to be expected, a smaller proportion of persons accepted for aid to the blind reported gainful employment than in the general blind population—less than 6 percent of the former, as compared with 10.5 percent in the National Health Survey and 18 percent of those who responded to the special questionnaire in the 1920 census.

Prevention and Rehabilitation

It has been variously stated that from two-thirds to three-fourths of all blindness is preventable. While no satisfactory figures are available to substantiate this estimate, it is certain that much blindness can be prevented. Since few blind persons recover their sight, since blindness is a handicap offering only limited encouragement for rehabilitation, and since opportunity for employment is comparatively limited for the blind, prevention is of the utmost importance.

The probability that more than half the blind are in ages 65 and over places a certain restriction on occupational rehabilitation, but that fact should not receive undue weight in considering the need for preventive and rehabilitative meas-

Table 8.—Comparison of characteristics of blind persons

| Characteristic | Percentage distribution of applicants accepted for aid to the blind ¹ | Percentage distribution of blind persons enumerated in— | | |
|-----------------------------|--|---|--------------------------|--------------------------|
| | | National Health Survey ² | 1930 census ³ | 1920 census ⁴ |
| AGE | | | | |
| Under 16..... | 0.6 | 3.4 | 5.4 | 8.0 |
| 15-19..... | 1.4 | 1.3 | 3.2 | 4.7 |
| 20-44..... | 23.9 | 16.7 | 19.0 | 21.2 |
| 45-64..... | 42.3 | 29.7 | 28.1 | 26.7 |
| 65 and over..... | 31.8 | 48.7 | 44.3 | 39.4 |
| SEX | | | | |
| Male..... | 59.2 | 50.5 | 57.5 | 57.4 |
| Female..... | 40.8 | 49.5 | 42.5 | 42.6 |
| RACE | | | | |
| White..... | 75.1 | 83.2 | 87.1 | 87.1 |
| Negro..... | 23.2 | 14.4 | 14.4 | 11.9 |
| Other..... | 1.7 | 2.4 | 2.4 | 1.0 |
| MARITAL STATUS | | | | |
| Both sexes: | | | | |
| Married..... | 38.0 | ..... | ..... | 37.2 |
| Widowed..... | 25.1 | ..... | ..... | 29.0 |
| Single..... | 25.8 | ..... | ..... | 35.0 |
| Divorced or separated..... | 11.1 | ..... | ..... | 1.8 |
| Males: | | | | |
| Married..... | ..... | ..... | ..... | 45.2 |
| Widowed..... | ..... | ..... | ..... | 18.2 |
| Single..... | ..... | ..... | ..... | 34.3 |
| Divorced or separated..... | ..... | ..... | ..... | 2.3 |
| Females: | | | | |
| Married..... | ..... | ..... | ..... | 25.8 |
| Widowed..... | ..... | ..... | ..... | 37.8 |
| Single..... | ..... | ..... | ..... | 35.8 |
| Divorced or separated..... | ..... | ..... | ..... | 1.1 |
| EMPLOYMENT STATUS | | | | |
| Gainfully employed..... | 5.7 | 10.5 | ..... | 17.9 |
| Sheltered employment..... | 1.1 | ..... | ..... | ..... |
| Self-employment..... | 2.9 | ..... | ..... | ..... |
| Other employment..... | 1.7 | ..... | ..... | ..... |
| Not gainfully employed..... | 94.3 | 89.5 | ..... | 82.1 |

¹ Under the Social Security Act, fiscal years 1937-38 through 1939-40.

² Data from Britten, Rollo H., "Blindness, as Recorded in the National Health Survey . . ." *Public Health Reports*, Vol. 56, No. 46 (Nov. 14, 1941): age, from table 2, p. 2104; sex, from table 1, p. 2104; employment status, from table 21, p. 2212.

³ Data from Bureau of the Census, *The Blind and Deaf-Mutes in the United States, 1930*, Washington: The Bureau, 1931: age and sex, from table 5, p. 16; race, from table 3, p. 10.

⁴ Data from Bureau of the Census, *The Blind in the United States, 1920*: age, sex, race, and marital status, from table 4, p. 17; employment status from table 11, p. 25.

ures for the blind. According to the 1920 census, 36 percent of the blind became blind before their twentieth birthday, even though only 13 percent of the blind reporting were under age 20; more than 43 percent became blind between the ages of 20-64, and 48 percent of the blind were in these ages in 1920; only 19 percent of those reporting became blind on or after their sixty-fifth birthday, while 38 percent of the blind had reached age 65 or over. The ratio of those who had become blind in early youth to those becoming blind in more advanced ages would have changed since 1920, because of the increased proportion of the aged in our population and because of the reduced occurrence of blindness at birth and in early infancy. On the other hand, it is reasonable to assume that the 1920 census may have over-represented the number becoming blind in later life, since they probably had a greater chance of being included

in the census and of responding to the special questionnaire than did those blind from birth or early youth. For that reason, the relative differences between attained age and age at onset may not be greatly different now from the 1920 findings.

The vocational adjustment of the blind presents two problems: guidance and placement of those who lose their sight in childhood or at birth and occupational and social readjustment of those who become blind in adult life. It is important to realize that many of the blind are of such advanced age that they would probably not be employed even if they did not suffer from their handicap. For these, society should provide means to help them adjust to their handicap, socially and emotionally. Both prevention of blindness and to a lesser extent rehabilitation will net valuable social returns.