So far as any of you look upon these foundations from without it is my hope that some things have been said which will rouse in you a sympathetic appreciation of the kind of work which I have sought to emphasize as the most precious type of endeavor, for further progress will depend largely on the appreciation and support given to this by the best elements in the medical profession.

The material side of our advancing civilization has developed during a thousand years to an astonishing degree, but we must not be misled, as sometimes happens, into confusing material developments with intellectual progress. These foundations of to-day are but aids to active minds that use them. The mind, the man, is the essential thing, and any device which does not improve him and give him the very best opportunity to increase his powers, has but slight claim to our regard. I desire, therefore, to leave with you a strong impression of the paramount importance of our mental attitude in establishing the right relations between research foundations and medicine.

Permit me then in closing to quote a little fable from Luqman, as it seems to emphasize this point. Luqman, the sage, was reputed, I am told, to have been either an Abyssinian slave of King David or the son of Job's maternal aunt. That question is not settled—but his fable has a pleasant oriental flavor. It runs as follows:

In the heat of the day the lion retired to a cave. While resting there a rat ran over him. The lion jumped up in fright, whereat the jackal laughed. Perceiving this the lion said, "I was not frightened at the rat, but at my own alarm"; thus showing that to the mighty their state of mind is of more moment than death itself.

Henry H. Donaldson

FAMILY RECORDS OF GRADUATES OF WESLEYAN UNIVERSITY

FAMILY RECORDS OF GRADUATES OF WESLEYAN UNIVERSITY

Wesleyan University was founded in 1831, and the first class graduated in 1833. The total number of graduates, including the class of 1910, is 2,849—2,627 men and 222 women. The following statistics relating to married life are given separately for men and women. The first women graduates took their degrees in the decade 1871–80.

1. *Marriages*

In the first decade, 1833–40, 119 out of 142 graduates married (84 per cent.); 21 of them married twice, 3 of them three times, 1 of them four times and 1 five times. In the second decade, 1841–50, 217 out of 264 married (82 per cent.); 47 married twice, 4 three times and 1 four times. In the third decade, 1851–60, 250 out of 276 married (90 per cent.); 50 married twice, 5 three times and 1 four times. From 1861–70, 239 married out of 262 (again 90 per cent.); 37 married twice and 6 three times. In the fifth decade, 1871–80, 271 out of 311 male graduates married (87.1 per cent.); 41 married twice and 1 three times. Five out of the 8 women graduates in this decade married. In the sixth decade, 1881–90, 268 out of 340 of the men married (78.82 per cent.), 14 of them having married twice. Fourteen out of the 29 women graduates of this decade married, that is, 48 per cent. In the seventh decade, 1891–1900, 344 out of the 461 male graduates married (74.62 per cent.); 10 of them married twice. Fifty-one women out of the 95 who graduated in this decade married (53.68 per cent.). In the last decade, 1901–10, 221 men out of 570 have so far married (38.8 per cent.); 3 of them have married twice. Twenty-six out of the 90 women who graduated in this decade have married (28.8 per cent.).

Of the 2,627 male graduates, 1,930 have married (73.46 per cent.). Of the 222 women graduates, 96 have married (43.28 per cent.). The percentage of married women compared

with that of men who graduated in their own classes and have married, is 43.48 per cent. as against 65.7 per cent.

TABLE I

Percentage of Graduates Married

Classes	Men	Women
1833–40	84	—
1841–50	82	—
1851–60	90	—
1861–70	90	—
1871–80	87.1	62.5
1881–90	78.82	48
1891–1900	74.62	53.68
1901–10	38.9	28.8

2. *Children*

In the first decade, 1833–40, from 119 marriages of graduates there were 535 children, 275 boys and 260 girls, an average to the family of 4.49; one family comprised 12 children, four 11 children, four 10 children, and there were only eight childless marriages. In the second decade, 1841–50, from the marriage of 217 graduates there were 750 children, 398 boys and 352 girls, an average to the family of 3.46; there were three families of 10 children each, one of 11 and thirty-two childless marriages. In the third decade, from the marriage of 250 graduates there were 818 children, 396 boys and 422 girls, an average of 3.27; one family consisted of 13 children, one of 11 and one of 10; there were twenty-six childless marriages. In the fourth decade, from 239 marriages there were 688 children, 360 boys and 328 girls, an average of 2.9 to a family; there was one family of 10 children, and there were thirty-two childless marriages. In the fifth decade, 271 male graduates who married had 686 children, 374 boys and 312 girls, an average of 2.53; there was one family of 10 children and two of 9, and there were forty-five childless marriages. The 5 women graduates of this decade who married had 13 children, 7 boys and 6 girls, 8 of the 13 being already reported in the figures of this decade, inasmuch as they were children of women graduates who married graduates of Wesleyan. The average number of children to a marriage of the women graduates was 2.6. In the sixth decade, 1881–90, the 268 male graduates who married had 527 children, 289 boys and 238 girls, an average to a family of 1.96; there was only one large family, made up of 11 children. The 14 women graduates of this decade who married had 28 children, 13 boys and 15 girls, 10 of the 28 being previously reported in the decade owing to intermarriage of Wesleyan graduates; the average to a family in the case of the women graduates of this decade was 2. In the seventh decade, 344 men who married had 488 children, 250 boys and 238 girls, an average to the family of 1.42; there was one family of 8 children. The 51 women graduates of this decade who married had 70 children, 35 boys and 35 girls, 42 of them being previously reported, an average for the women graduates who married in this decade of 1.37. In the last decade, 1901–10, the 222 men who have married have had 180 children, 94 boys and 86 girls, an average to the family of .81; the largest family reported so far is 3. The 26 women of this decade who have married have had 18 children, 7 boys and 11 girls, 10 of them being reported in the 180 above mentioned; the average family to the married women graduates of this decade is to date .69.

TABLE II

Average Number of Children to a Family

Classes	Men	Women
1833–40	4.49	—
1841–50	3.46	—
1851–60	3.27	—
1861–70	2.9	—
1871–80	2.53	2.6
1881–90	1.96	2
1891–1900	1.42	1.37
1901–10	.81	.69

The total number of children of male graduates of Wesleyan to date is 4,672, 2,436 boys and 2,236 girls, an average to the family of 2.42. The total number of children of women graduates who have married is 129, 62 boys and 67 girls, an average to each married woman of 1.34. On account of the large families in the early days, when there were no women graduates, the comparison should, how-

ever, be made between men and women of the same graduating classes. The average number of children of the married men in the same classes as the women is 1.7 as compared with 1.34 for the women. The total number of children of Wesleyan alumni, men and women, excluding duplicates, is 4,731. Of these 1,076 have been reported dead.

Frank W. Nicolson

AN INDEX OF FISH ENVIRONMENTS

In studying the distribution and success of fishes within a given area, one often notes the absence of certain species from localities which appear quite suitable fish habitats upon inspection, or even upon determination of the oxygen content of the water. Evidently, the causes of this absence is not a life and death matter such as is often supposed to be true in animal distribution. But since fishes are able to move readily from place to place, they may leave or fail to enter a locality where the conditions are entirely compatible with life for a longer or shorter period. Yet the change in conditions may be great enough to cause the fishes either to turn back or to leave the locality because of stimulation and increased activity. Wishing to test this reaction possibility, we devised a means of studying the behavior of fishes when they encounter differences in gases or solids in solution. The apparatus consisted of a device giving a constant flow of water with desired amounts of dissolved gases, and at any temperature within ordinary experimental needs. Two tanks, 120 cm. long by 20.5 cm. wide by 14 cm. deep were arranged under identical and symmetrical surrounding conditions. Water was introduced into both ends of the tanks at the same rate and was allowed to flow out at the center. The same kind of water was introduced into the two ends of the control tank. In the experimental tank the water introduced at one end was like that of the control, while the gas content of that introduced at the other end had been experimentally modified. This established a gradient between the two kinds of water. Fishes put into the tanks tend to go back and forth and thus encounter the experimental gradient. When the change of conditions thus encountered was such as to affect the fishes, they reacted either by turning back or by passing through the gradient into the treated water. But in this case they quickly returned to the untreated water, thus spending a shorter time in the treated water.

Eight species of fish, widely separated taxonomically, were studied in detail. All the fishes were slightly negative or indefinite in their reaction to differences in oxygen content. We found no good evidence that they react to nitrogen. Their reaction to water which had lost six parts per million of its salts (mainly magnesium and calcium), 15 c.c. of nitrogen and 2 c.c. of carbondioxide per liter by boiling was about the same as to difference in oxygen content. All the fishes were decidedly negative in their reaction to increased carbon dioxide. The differences tried varied from 5 to 60 c.c. per liter above that in which the fish had been kept. When increased carbon dioxide accompanied low oxygen the negative reaction was very marked; the fishes turned back when the gradient was encountered and only rarely entered the part containing the highest carbon dioxide and lowest oxygen.

Several workers have shown that carbon dioxide is very toxic to fish. It appears to be much more so than corresponding differences (24 c.c. per liter) in oxygen content. Fishes turn away when they encounter an increase of as little as 5 c.c. per liter. Since a large amount of dissolved carbon dioxide is commonly accompanied by a low oxygen content, and other important factors, the carbon dioxide content of water (strongly alkaline waters excepted) is probably the best single index of the suitability of that water for fishes. The methods and these results, as well as others, will be published in detail elsewhere as soon as they can be prepared. These aspects of the results are sufficiently different from what workers appear to have been expecting to justify their publication here on account of