

to appear to the general public as having the weight of authority behind them, there is no telling where we shall be before the inevitable reaction sets in.

Personally I believe that every student who takes a four year course in high school should be required to study the English language during those four years, and at the same time he should be getting some definite knowledge of either mathematics or the classical languages, preferably of both. Distinct vocational training might well be left in the background until the student has had an opportunity to get some real mental training. I know this is the opinion of the great majority of my colleagues at the University of Cincinnati, including Dean Schneider, of the college of engineering, who is a recognized expert on vocational training. And I do not doubt that it is the opinion of the great majority of college teachers throughout the country.

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SEX IN MULTIPLE BIRTHS

In a copy of lectures delivered by Dr. Raymond Pearl at the 1912 Graduate School of Agriculture at Lansing, Mich., I find the following tables given, indicating that in multiple mammalian births as the numbers per birth increase, the ratio of males to females decreases.

<i>Man</i>			
No. Young per Birth		Males per 1,000 Females	
1		1,057	
2		1,043	
3		548	
<i>Sheep</i>			
		3 Males; 2 Females	
3 Males	1 Female	1 Male	3 Females
16	39	22	38

In the sheep there are 215 females to 130 males.

It is worthy of note that these data are from normally uniparous species. In swine where the number at a birth may vary from one to twenty-three (in an exceptional instance) this excess of females is not apparent. In 174 litters the number of males per litter

and the expectation based on chance, using the relative frequency of the different-sized litters (fourteen per litter being the largest) was as follows:

No. Males						
per litter.....	0	1	2	3	4	5
Expectation ..	3.4	12.8	24.6	33.4	34.7	28.5
Actual	2	13	26	28	31	28
No. Males						
per litter.....	6	7	8	9	10	11
Expectation ..	19.0	10.4	4.6	1.7	0.48	0.11
Actual	21	12	8	2	2	1

This shows but a slight departure from expectation and is within the limits of error for such small numbers. It seems doubtful if there is a tendency toward increased proportions of females in multiparous births. In fact the excess is slightly on the male side here.

In 126 births from various private collie, fox terrier, Scottish terrier and Boston bull terrier records, the following results appear:

No. male pups ...	0	1	2	3	4	5	6
Expectation	15.1	35.75	37	24.5	10.86	2.8	.3
Actual	14	36	39	22	11	4	0

These statistics give qualitatively the same result. That this accordance with expectation on the basis of chance is not necessarily a property of normal multiple births, is shown by the following statistics on sheep triplets from the Iowa State College flock and two farmers' flocks located near there. The total number of lambings is 146.

	3 Males	2 Males; 1 Female	1 Male; 2 Females	3 Females
Expectation...	18.25	54.75	54.75	18.25
Actual	21.00	56.00	51.00	18.00

This gives 226 males and 212 females. The smallness of these numbers does not conclusively indicate that influences other than mere chance do not operate, but they are interesting since they give opposing evidence on the point discussed by Dr. Pearl.

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