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Notes:

- ⁴ T. S. Painter, and E. R. Reindorp, *Chromosoma*, 1 (1939).
⁵ J. Rückert, *Anat. Anz.*, 7, 107 (1892).
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⁷ T. Caspersson, and Jack Schultz, *Nature*, 142, 294 (1938).
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A NEW INHERITED CHARACTER IN MAN

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Observations on more than 280 human subjects show the existence of two fairly distinct classes with respect to the ability to turn up the lateral edges of the tongue. In typical positive cases the edges can be rolled together over a considerable portion of the distal area of the tongue, while the organ is slightly protruded. In negative cases there is no turning up of the edges at all. A few intermediates have been encountered; and in numerous cases the ability, at first absent, has been acquired by practice. This latter phenomenon is most frequent in children, only one clear case having been found in an adult—and here prolonged efforts were necessary, whereas in children a few hours are sometimes enough. One man reports that he learned the trick as a child, but now has forgotten it and can no longer do it. It should be added that some children, like most negative adults, appear to be unable to learn. In the data that follow, all cases where the ability was at first absent are entered as negative.

Another complication encountered is that a few children are unwilling to show whether they possess the ability or not. In one of these cases the child later said that this unwillingness was due to embarrassment because the ability was absent. The few (two) remaining such individuals have been entered in the tables as negatives.

The ability evidently has no relation to sex, as is shown by table 1:

	TABLE 1			
	POSITIVE	NEGATIVE	TOTAL	PER CENT NEGATIVE
Female	88	43	131	32.8 ± 4.1*
Male	95	56	151	37.1 ± 3.9*
Total	183	99	282	35.1 ± 2.8*

* Standard error.

Studies of families indicate that the ability is inherited, as shown by tables 2 and 3.

TABLE 2

MOTHER	FATHER	NUMBER OF FAMILIES	OFFSPRING		TOTAL
			POSITIVE	NEGATIVE	
Positive	Positive	18	28	5 (1)	33
Positive	Negative	11	16	11 (1)	27
Negative	Positive	14	17	11 (2)	28
Negative	Negative	4	4	9	13
Positive	Unknown	10	14	3	17
Negative	Unknown	2	4	0	4
Unknown	Positive	3	2	2 (1)	4
Unknown	Negative	1	0	1	1

(Numbers in parentheses indicate individuals known to have acquired the ability.)

TABLE 3

NUMBER IN FRATERNITY	NUMBER OF FAMILIES WITH NUMBER OF NEGATIVES INDICATED						
	0	1	2	3	4	5	6
2	11	7	2				
3	3	4	3	1			
4	2	0	0	1	0		
5	2	0	0	0	0	0	
6	0	0	0	1	1	0	0

Table 4 indicates that random mating occurs:

TABLE 4

HUSBAND AND WIFE	NUMBER OF PAIRS	EXPECTED
Positive × positive	25	27
Positive × negative	31	28
Negative × negative	6	7

As will be seen from table 2, neither class breeds true. Positive × positive has given five negatives, negative × negative has given four positives. The first cases do not seem doubtful, and have come in five separate families. Two of them have each a negative grandparent, and a third has a negative half-brother. This third child learned the trick in one day. The four positives from two negative parents occurred in two families (two in each); both of these families are from fathers with slight speech defects, which suggests that the negative tests on the fathers may be dependent on some additional complicating factor.¹ It is possible, though not proved, that ability to turn up the edges of the tongue may be due to a single dominant gene, with the fairly frequent occurrence of additional complications.

Two pairs of identical twins have been tested. All four individuals (which are included as separate ones in table 3) are positive—a result in

agreement with the supposition of simple inheritance of the character, but needing to be checked by additional observations.

The individuals in table 1 belong to a wide variety of races, but are mostly Americans of mixed European ancestry. Both positives and negatives have been observed in the following groups though the numbers are too small to make the proportions significant: English, Russian, Russian Jewish, Dutch, Polish, Negro (presumably hybrids with whites), Japanese.

The data here recorded have been collected by many observers. Since the members of a given family are usually recorded by the same observer, it might be supposed that the correlation between relatives is a spurious one, due only to differences in classifying intermediates. This supposition is negated by the absence of a correlation between husband and wife, who are also usually recorded by the same observer.

Another possible interpretation of the data is that there is no truly genetic element, the correlations being dependent on family habits or customs, or on imitation in some form. This supposition is not supported by two sets of data: the effect of the father and of the mother on the ability of their offspring is equal; and there is no indication of a striking difference in frequencies of the two classes in the various national and language groups included among those studied.

Summary.—The ability to turn up the edges of the tongue, present in about 65 per cent of the persons studied, is conditioned at least in part by heredity.

¹ It should be added, however, that other individuals with slight speech defects have been found to be positive.

INFLUENCE OF FEMALE STOCK ON THE FUNCTIONING OF SMALL POLLEN MALE GAMETES

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In the many cases of natural or induced heterozygous small pollen conditions in maize it is now considered axiomatic that the small pollen grains do not function in competition with the normal, large grains. This is true whether the production of small pollen grains is associated with a detectable cytological deficiency or occurs in a stock in which the chromosomes show no visible abnormality.

In the case of small pollen-1, sp_1 , Mangelsdorf^{1,2} found that less than one per cent of the sp_1 pollen grains effected fertilization in competition with