

est grades as the random selection—196 as opposed to 56. This is the most significant fact in Table III. In the second place, as President Lowell's more extensive data based on a different definition of success clearly show, it appears to make little difference what subjects a student elects. There is no evidence that social sciences are a better preparation than anything else for law or that natural sciences are better for medicine. Furthermore, the number of elections in each subject by each group of the class of 1894 shows no marked correlation, not otherwise accounted for, between subjects elected and success in later life.

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BOWDOIN COLLEGE,  
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*INBREEDING IN THE INSTRUCTIONAL  
CORPS OF AMERICAN COLLEGES  
AND UNIVERSITIES*

By inbreeding is here meant the election of alumni or alumnae to the instructional staff of their alma mater. This practise seems peculiarly American in that it obtains in our schools to a far greater extent than in the schools of Europe. In the German *Gymnasium*, *e. g.*, it is comparatively rare, and when it does occur the instructor is elected to his alma mater only after a long course of study or teaching elsewhere.

In American schools this case is the exception rather than the rule, especially in the less reputable schools where the rule is to elect the inbred instructor soon after graduation, or even before. The reasons for a high per cent. of inbreeding in our schools, as a study of inbred faculties suggests them, are: (1) Inbreeding as a set policy, since it is believed that the alumni are truer to their alma mater than outsiders. This is rather unusual. (2) Financial considerations in that recent graduates can be had cheaper than more seasoned and better trained men elsewhere. (3) Lack of outlook on the available candidates on the part of persons electing. (4) Sectarian considerations in church schools

and race considerations in race schools which tend to narrow the field of selection, and even to restrict it to some degree to the alumni of such schools themselves. (5) Belief in "home product." Thus for a good many schools there can be shown to be a certain territory from which each draws the additions to its faculty. (6) Fond teachers who bring about the election of their students to their own faculty. (7) Family or friendly relations of the inbred instructor to the persons electing.

On the results of inbreeding and therefore on the advisability of it as a plan, it is difficult to give tangible evidence. To be sure, inbreeding in plants and animals has been generally considered disastrous, hence the stigma popularly attached to the term.

In the breeding of animals and plants, inbreeding is never advantageous unless you have almost perfect animals to start with and unless vigorous selection is practised. Then, with great care and good judgment the best individuals are generally produced by it.

But because inbreeding with average stock in plants and animals is mostly disastrous does not prove that inbreeding in college faculties must be so. The analogy is a very loose one. In the one case a definite biological process, governed by fixed laws: in the other, merely a social-intellectual corporation, influencing its fledglings in a less exact and measurable way, who in turn would influence their students in the same way, and so on.

What really happens in inbreeding in faculties is this: A more or less constant body of professors has a certain range of ideas and a certain range of ability: Intellectually, morally and socially. These ideas and capacities they transmit to a greater or less extent to their students. These students are elected to the corporation without taking on any considerable number of new ideas or capacities from elsewhere. Thus if we grant that the older men are not steadily deteriorating and that the professors impart themselves fully to their pupils, the range of intellectual, moral and social potencies would remain about constant.

If we do not grant this, the faculty is plainly deteriorating and the popular saying that such faculties are "going to seed" is justified.

Inbreeding, pure and simple, *i. e.*, when the student gets practically no training beyond that obtained at the alma mater, might be harmless or even advantageous, in case the faculty in question were the one most eminent faculty extant. Otherwise, importing new strains must be more advantageous. For if the faculty were only on a par with other eminent faculties, cross breeding would certainly result in an interchange of ideas and methods which could not help but be of advantage.

But inbreeding which receives the graduate back after a term of years of study and teaching elsewhere—and this is generally the case in reputable schools in America—seems not only harmless, but even wise, in that it brings loyal sons back to the alma mater.

Again, the inbred man may be elected to a minor position on the instructional staff, and may use such position as a stepping stone to a better position elsewhere. This is a very common case in the larger and better institutions, hence the floating group of younger instructors, subject to great changes from year to year in such schools.

Inbreeding pure and simple is restricted almost entirely to the less reputable schools, and on the other hand to a few of the most eminent, such as Johns Hopkins, Columbia and Chicago, in which, however, mainly minor instructors are inbred. In these latter institutions you find a great number of the younger instructors who have received all of their degrees, even up to the number of three or four, from the alma mater.

In conclusion, the results of inbreeding in American colleges seem amply to justify the low esteem in which the practise is held in some quarters. For while inbreeding is justifiable within certain limitations, the practise has grown to almost disastrous proportions and is no doubt to blame to a great extent for the low efficiency of many of our schools.

The accompanying table gives data on seventy-five schools, viz., five southern, six

	1st Degree	2d Degree	3d Degree	1st and 2d Degrees	1st and 3d Degrees	1st, 2d and 3d Degrees	Student, No Degree	Graduate, No Degree	Per Cent. of Inbreeding
Adelphi College	5	1							16.6
University of Arizona	3								7.5
Belmont College	1								3.3
Bethany College (W. Va.)	3	3		1					43.7
Brigham Young College	5						5		56.4
Bryn Mawr College	4		3	2	1				22.9
Butler University	4	1							20
University of California	55	2	21	6	9	4	2		29.8
University of Chicago	43	2	48	2	13	1	2	5	35.2
Clark University	1		1						13.3
Colorado College	3	1							9.7
Columbia University	19	16	63	6	13	14	15		56.9
Cornell College	15	2		3					43.4
Dakotah Wesleyan College	2								7.4
Drury College	3	1		2				3	36
Denance College								14	46.6
Earlham College	11			9					58.8
Emory and Henry College							6		46.1
University of State of Florida									0
Georgetown College	5			3					40
Hanover College	2			4					30
Hobart College		2		1					13.3
University of Idaho									9
Indiana University	46	5							62.5
State University of Iowa	1	3	27	17	4	6	2		45.3
James Milliken University	5	1		1				9	28
Johns Hopkins University	4		61	36					52.5
University of Kansas	41	3		16		1			31
Kenyon College									0
Kansas Wesleyan College	4			1					22.7
Knox College								1	22.7
Lawrence University	2			2					16.6
Leland Stanford University	1	5	1	6		2			29.2
Lombard College	2								15.3
Macalester College	4								21
Miami University	3			2					11.1
Millsap College									0
Milton College				5				1	66.6
University of Mississippi	14								46.6
Monmouth College	5			2			1	3	35.7
Moore's Hill College	3			2				1	43.7
Mount Union College								3	30.4
Nebraska Wesleyan University	7	1						7	28.1
University of Nevada	6								15
University of New Mexico	3								18.2
Oberlin College	37	2		2				18	65.5
Ohio State University	54	2	12	5	4			1	36.1
University of State of Oklahoma	6								20
Olivet College		2						1	13
Oxford College for Women	4								17.4
University of Pacific	1			1					8.3
Pacific University								1	5.8
Parsons College	1			3					21
Pennsylvania State College	15	4	2	3					21.7
Pennsylvania College	2			5					46.6
Ripon College	4								16.6
Rockford College	3								13.6
St. Stephen's College		1							10
Syracuse University								31	14.7
Swarthmore College	8	1		2					23.4
Tabor College	3								23
Taylor University	2						7		41.1
Texas Christian University	2							2	18.1
Transylvania University	11			1					40
Ursinus College	4								18.1
University of Utah	15	1					6		40.3
Vincennes College	2								13.3
University of Washington	9	2		2			1		13.4
Western College for Women	1								6.6
Western Reserve University	2	1	19	1					21.1
West Virginia University	5	5		10	3				38.9
Wilmington College	7	1							53.3
Wittenberg College	6			10					68.1
Woman's College of Baltimore	3								10.7
University of Wyoming	7					1			20

women's, twelve eastern and twenty-two central schools and sixteen state universities,

large and small. These were considered representative of the groups to which they belong, and thus the averages may be considered typical. The per cent. of inbreeding varies in different sections of the country as well as in different kinds of schools, as follows:

	Per Cent.
Six women's colleges average .....	12.4
Fourteen western schools average ..	23.5
Five southern schools average ....	25.3
Sixteen state universities average .	26.2
Twelve eastern schools average ...	29.6
Twenty-two central schools average	33.7

The table shows the kind of degrees the inbred instructor received from his alma mater. Captions have also been made for those having studied at the alma mater, either as undergraduates or as graduates, without receiving a degree. Persons were not entered under these two captions unless a considerable amount of work was thus done in the alma mater. Frequently more than one first, second or third degree was obtained. Lack of space prevented showing this in detail. M.D. and C.E. are counted as third degrees. Western schools means west of the Mississippi. Eastern schools means schools east of Ohio.

CHARLES HART HANDSCHIN

#### THE TENTH INTERCOLLEGIATE NEW ENGLAND GEOLOGICAL EXCURSION

THE tenth Intercollegiate New England Geological excursion was taken Saturday, October 22, in the vicinity of Hanover, N. H., under the leadership of Professor J. W. Goldthwait, of Dartmouth College.

Friday evening a preliminary meeting, at which papers were read and discussed was held in the geological lecture room of Butterfield Museum. This meeting was attended by twenty-one persons. Professor J. W. Goldthwait gave a summary of his work on the post-glacial subsidences and uplifts in the St. Lawrence Valley. Professor D. W. Johnson discussed the evidence of recent subsidence on the New England coast and showed that the apparent sinking of the land may be accounted for in other ways. His recent studies show that there can have been no change in the

level of the New England coast in the last 1,000 to 3,000 years. The Nantasket beaches show that there has been no change in level in at least 1,000 years. Professor B. K. Emerson gave a summary of the glacial geology of the Connecticut Valley.

The excursion Saturday morning was taken to the Connecticut Valley esker to study its relation to the other deposits in the valley. The clays of the "highest terrace" were shown to have been deposited in the still waters of a lake formed by a temporary dam of some sort, perhaps a ledge of rock which the stream later abandoned as it cut a new channel into the softer glacial deposits of the former valley. The deltas at the mouths of the tributary streams at altitudes above the "highest terrace" seem to have been laid down in the lake in which the silt of the "highest terrace" was deposited. After a study of the unprotected terraces and abandoned, incised meanders of Mink Brook the party were obliged to stop on account of rain.

Representatives were in attendance from Amherst, Brown, Dartmouth, Harvard, Holyoke, Massachusetts Agricultural College, Middlebury, Smith, University of Vermont, Wellesley, Wesleyan, Williams.

No announcement was made as to the place of the next excursion.

HERDMAN F. CLELAND,  
*Secretary*

#### SCIENTIFIC NOTES AND NEWS

FOR his researches on the determination of atomic weights the Royal Society has awarded the Davy medal to Dr. Theodore W. Richards, professor of chemistry at Harvard University.

THE Harben Lectures of the Royal Institute of Public Health, of London, for 1912, will be given by Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, New York.

PROFESSOR W. S. EICHELBERGER assumed the directorship of the U. S. Nautical office on November 2, succeeding Professor Milton Updegraff.