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## Doctoral Degrees and Library Resources

*This paper brings up to date a similar report which was published in College & Research Libraries in 1966 showing the relationship between library holdings and the number of doctoral degrees granted in several American universities. Correlation between the two remains high. Generally speaking, the strongest graduate offerings are at institutions with the strongest libraries.*

A STUDY PUBLISHED in 1966 revealed a close relationship between doctoral degrees conferred by American universities and library resources and support.<sup>1</sup> The recent publication of the 10th edition of *American Universities and Colleges*<sup>2</sup> provides an opportunity to update the previous investigation. In a tabular summary of "Earned Doctorates, 1957-1966, by Field and Institution,"<sup>3</sup> the ACE directory presents the number of degrees awarded by each institution. The figures are broken down further by broad categories: humanities, biological sciences, physical sciences, social sciences, and a miscellaneous group not classifiable by fields.

A total of 214 universities, colleges, seminaries, institutes, and schools are listed by *American Universities and Colleges* as having conferred five or more doctoral degrees during the decade 1957-66. For present purposes, only those institutions granting one hundred or more degrees in the course of the

ten-year period are considered—a total of 120 universities or other institutions of higher education. The accompanying table includes the selected group, rearranged in the order of the number of degrees conferred. The two final columns report for each library the number of volumes held and the total expenditures for books, periodicals, and binding as of 1966, the final year covered by the ten-year record of statistics of doctoral degrees.<sup>4</sup>

According to the ACE summary, 121,750 doctoral degrees were granted by American universities and colleges during the decade. Of the total, 77,465 degrees, or about 64 per cent (nearly two-thirds), came from thirty-eight institutions with library holdings in excess of a million volumes each. The mean figure for the thirty-eight libraries was 2,135,565 volumes.

A close correlation existed also between the number of degrees conferred and the level of financial support. The forty universities whose libraries spent more than \$500,000 each for books, periodicals, and binding in 1965-66 granted a total of 79,126 doctoral degrees, or 65 per cent of the whole figure of 121,750.

<sup>1</sup> *College & Research Libraries*, XXVII (March 1966), 123-29, 141.

<sup>2</sup> Washington: (ACE) American Council on Education, 1968.

<sup>3</sup> *Ibid.*, p. 1699-1702.

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<sup>4</sup> The library data are based chiefly on *Library Statistics of Colleges and Universities, 1965-66* (Chicago: American Library Association, 1967).

The list of degree-granting institutions was headed by the University of California, which awarded 6,981 doctorates during the decade. The total represents seven campuses, but 4,869 degrees came from Berkeley and Los Angeles combined, both owning multi-million volume libraries.

Book collections and expenditures have continued to expand since the 1966 figures were compiled. As reported in the Association of Research Libraries' "Academic Library Statistics" for 1967-68, fifty-one of the seventy member libraries possessed more than a million volumes each and eleven more were on the verge of reaching the million-volume level at the end of the year. In expenditures for books and binding, twenty-six of the seventy exceeded \$1,000,000 each for 1967-68; sixty of the seventy had book expenditures above \$500,000 for the year.

A distinction should be made among several principal types of institutions included in the select group of 120. First, there are the general universities, encompassing virtually all fields. Second, there are a score or more of former A. and M. state colleges recently converted into general universities, since which time a majority have been actively engaged in developing major general libraries. Examples are Purdue, Iowa State, Pennsylvania State, Oregon State, Oklahoma State, Texas A. & M., North Carolina State, Washington State, Kansas State, Auburn, Utah State, Colorado State, and Montana State. A third recognizable category is the specialized technical institutions—California Institute of Technology, Carnegie Institute of Technology, Polytechnic Institute of Brooklyn, Rensselaer Polytechnic Institute, Illinois Institute of Technology,

Virginia Polytechnic Institute, Case Institute of Technology, and Georgia Institute of Technology—which confer degrees primarily in the physical and biological sciences, and whose library requirements, therefore, are considerably less diverse than are those of general universities dealing with all fields. Another group of specialized institutions, a small one, is represented by the New School for Social Research, the Southwestern Baptist Theological Seminary, and the Union Theological Seminary.

Purely from a pragmatic point of view, one may conclude that quantitatively a library in a university offering comprehensive doctoral programs should possess a minimum of 1,500,000 volumes and ought to be spending not less than \$750,000 annually for books, periodicals, and binding. Among the thirty-four universities which granted an average of one hundred doctorates a year, or more, during the 1957-66 period, twenty-two met the suggested standard for volume holdings, as of July 1, 1968, and twenty-nine of the thirty-four spent in excess of \$750,000 each for books.

In summary, statistics of doctoral degrees granted and of library holdings and book expenditures strongly support the view that there is a high degree of correlation between the two in universities distinguished for their doctoral programs. With rare exceptions, an institution outstanding for its graduate offerings is equally notable for the strength of its library resources. It is perhaps equally obvious that a number of institutions granting the doctorate lack the library resources to support advanced level graduate study and need to undertake extensive development of their libraries.

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## DOCTORAL DEGREES AWARDED, 1957-1966, AND LIBRARY RESOURCES

Institution	Total No. Degrees	Humanities	Biological Sciences	Physical Sciences	Social Sciences	Miscellaneous	Volumes in Library, 1966	Book Expenditures 1965-66
California (all campuses)	6,981	519	2,031	2,670	1,731	30	7,111,539	\$5,254,125
Columbia	5,679	998	550	1,074	3,041	16	3,675,920	927,775
Illinois	4,194	384	960	1,872	938	40	4,083,634	1,744,763
Wisconsin	4,189	525	1,421	1,112	1,091	40	1,746,321	1,107,503
Harvard	3,864	813	452	981	1,591	27	7,600,357	1,596,989
Michigan	3,395	563	744	1,175	872	41	3,516,355	1,066,365
New York University	3,225	420	556	676	1,567	6	1,648,437	572,900
Ohio State	2,960	292	859	869	940		1,845,069	622,734
Minnesota	2,854	246	1,093	717	788	10	2,484,402	866,343
Stanford	2,613	261	265	1,248	791	48	2,764,211	1,074,801
Purdue	2,565	21	1,102	1,145	296	1	770,666	615,439
Indiana	2,542	419	280	332	1,504	7	1,943,256	1,116,335
Chicago	2,469	370	409	576	1,077	37	2,445,141	904,012
MIT	2,424	31	119	2,128	146		900,468	413,061
Yale	2,396	830	391	659	507	9	4,995,398	1,420,206
Michigan State	2,251	158	778	478	837		1,224,528	783,111
Cornell	2,132	208	891	456	571	6	2,892,539	1,149,001
Texas	1,957	235	356	732	634		1,912,018	1,002,131
Iowa State	1,934	396	516	822	200		586,627	291,379
Pennsylvania	1,809	311	298	533	657	10	1,958,602	655,402
Pennsylvania State	1,759	62	411	676	577	33	891,396	752,648
Northwestern	1,650	456	204	606	384		1,771,899	529,006
Southern California	1,579	333	218	153	875		1,192,240	379,345
University of Washington	1,568	221	378	596	365	8	1,466,906	840,028
Princeton	1,504	260	131	783	305	25	1,846,776	671,953
Iowa	1,362	27	396	352	587		1,284,836	623,896
Pittsburgh	1,220	156	250	391	420	3	997,896	544,327
North Carolina	1,135	234	246	266	389		1,385,234	581,824
Maryland	1,122	61	348	413	300		754,108	742,962
Rutgers	1,122	26	551	282	254	9	1,289,554	612,619
Johns Hopkins	1,103	142	312	470	174	5	1,500,322	320,361
Missouri	1,083	98	296	231	458		1,230,000	486,049
Florida	1,040	98	311	310	318	3	1,147,711	574,396
Catholic	1,007	367	149	205	285	1	681,901	114,990
Colorado	961	79	161	369	352		1,205,863	668,698
Duke	957	174	282	223	278		1,783,803	611,870
Syracuse	941	64	131	254	385	107	1,262,051	505,545
Louisiana	867	78	364	217	208		1,029,650	418,770

Institution	Total No. Degrees						Book	
		Humanities	Biological Sciences	Physical Sciences	Social Sciences	Miscellaneous	Volumes in Library, 1966	Expenditures 1965-66
Kansas	857	38	239	321	259		1,201,615	568,045
Rochester	855	248	247	286	74		906,410	449,786
Nebraska	803	38	170	146	449		820,791	340,938
Oklahoma	799	60	190	207	340	2	1,023,894	361,236
California Tech.	779		60	719			161,433	156,767
Florida State	749	56	206	202	273	12	747,116	559,568
Boston University	709		224	100	385		665,655	239,732
Wayne	709	84	97	193	333	2	992,242	581,535
Oregon State	680	18	344	215	95	8	506,662	246,361
Utah	677	43	171	329	134		924,381	352,140
Oregon	666	17	108	113	427	1	1,112,743	349,679
Fordham	650	165	152	93	240		721,276	250,127
Tennessee	640	23	217	205	195		903,665	609,132
Oklahoma State	634	2	194	242	196		800,200	278,000
Carnegie Tech.	633	8	14	569	42		246,616	126,176
Western Reserve	608	71	131	93	313		864,885	178,306
Brown	607	104	113	310	79	1	1,150,052	376,253
Virginia	574	54	60	213	243	4	1,288,634	465,780
Colorado State College	557	1	20	1	520	15	256,744	104,044
Texas A. & M.	547		258	258	31		475,070	261,885
Notre Dame	545	97	41	306	101		781,002	337,840
Connecticut	539	36	165	115	223		619,406	653,693
Washington (St. Louis)	527	42	126	235	119	5	936,754	571,528
North Carolina State	503		258	196	49		370,959	407,912
Washington State	499		243	94	162		879,094	296,225
Vanderbilt	497	149	129	134	85		995,839	379,732
Brooklyn Polytechnic	473			473			122,312	144,899
Tulane	460	113	168	98	79	2	950,710	391,901
St. Louis	450	88	95	119	148		719,741	216,653
Arizona	434	12	137	171	113	1	858,067	347,367
Denver	432	142	83	10	197		518,173	180,583
Temple	429	49	109	94	177		730,791	383,775
Rensselaer Polytechnic	423		7	401	9	6	130,927	120,909
Case Institute	415			377	37	1	138,545	119,085
George Peabody	397	23	49	20	305		995,839	379,731
Cincinnati	396	46	80	209	56	5	905,047	222,343
Kansas State	382	2	238	132	10		381,685	251,965
Georgetown	363	29	51	107	175	1	512,990	202,588
American University	361		44	9	308		151,007	153,583
Kentucky	360	18	117	66	159		1,131,070	441,246
Virginia Polytechnic	356		184	172			399,121	166,912

Institution	Total No. Degrees	Humanities	Biological Sciences	Physical Sciences	Social Sciences	Miscellaneous	Volumes in Library, 1966	Book Expenditures 1965-66
Illinois Inst. Tech.	345	1	56	285	3		84,135	27,500
Arkansas	343	31	19	66	227		508,370	157,981
Rice	343	33	28	265	17		547,383	396,204
George Washington	308	5	124	32	147		409,340	170,000
Georgia	303	15	118	35	124	11	678,529	500,084
Delaware	286	2	38	240	6		546,908	285,203
Loyola	278	36	133	17	92		462,216	251,272
Houston	277		117	28	132		383,376	342,843
Lehigh	277	7	16	239	15		448,378	124,412
Alabama	270	6	64	59	141		816,156	378,306
New Mexico	248	33	13	117	85		479,710	363,219
S.W. Baptist	248	248					366,954	48,332
Massachusetts	238	2	175	44	17		427,714	790,191
Emory	228	49	81	32	49	17	858,765	286,506
Wyoming	228		35	35	158		416,375	181,095
Brandeis	227	19	62	71	75		335,286	199,356
Yeshiva	215	35	87	18	75		397,025	257,712
Georgia Tech.	213			213			420,138	186,417
Claremont	210	48	51		111		402,202	172,475
Clark	200		67	96	37		252,527	41,714
Auburn	190	1	59	50	80		459,476	263,673
St. Johns	179	28	55	6	90		330,730	245,570
Utah State	179		120	29	30		408,950	159,558
Colorado State University	170		68	70	32		373,899	366,789
Arizona State	169	2	6	36	125		497,500	174,500
West Virginia	154	1	71	49	33		592,274	284,479
North Texas	150	16			134		537,097	313,741
Southern Illinois	148	25	42	2	79		700,000	604,700
Tufts	148	4	42	22	80		363,566	149,033
Bryn Mawr	141	61	15	24	35	6	323,524	81,862
North Dakota	140		35	7	98		280,733	150,940
Mississippi	135	3	45	28	59		396,829	153,901
Baylor	133	1	81	29	22		356,200	116,957
New Sch. Soc. Res.	124	9	34		81		46,009	35,381
Union Theological	123	123					393,123	30,187
Texas Tech.	121	12	16	19	74		700,316	418,137
Montana State	111		31	50	30		416,122	125,013
Adelphi	107		91	16			149,520	122,475
New Hampshire	105		45	60			394,494	209,944
Lawrence	103			103			171,433	52,721
Brigham Young	100	7	9	35	49		589,295	488,056