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THE AMERICAN INSTITUTE OF ACCOUNTANTS
ACCOUNTING TESTING PROGRAM

Bulletin No. 3

THE COLLEGE AND PROFESSIONAL ACCOUNTING TESTING PROGRAMS: RESULTS OF TESTS IN SCHOOLS OF BUSINESS OF FIFTY-SEVEN COLLEGES AND IN FIFTEEN PUBLIC ACCOUNTING FIRMS

Spring, 1947

Prepared by
Committee on Selection of Personnel
437 West 59th Street
New York 19, N. Y.

August, 1947

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I

INTRODUCTION

The objectives and the history of the project undertaken by the Committee on Selection of Personnel were presented in the introduction to Bulletin No. 1,[1] which dealt with the results of the College Accounting Testing Program in the fall of 1946. The theory and construction of objective examinations in professional accounting were discussed in Bulletin No. 2.[2] The present bulletin summarizes the results of the College and Professional Accounting Testing Programs carried on in the spring of 1947.

The purposes of these programs were (1) to provide colleges with information concerning the aptitude, achievement, and interests of undergraduates in accounting courses and thus assist schools of business in advising students concerning further study of accounting; (2) to establish a file of test records on college seniors from which reports could be made to prospective employers on request of the individual concerned; (3) to provide public accounting firms with information on employees; and (4) to obtain norms on the Orientation and Achievement Tests.

The Tests

The tests used in this program consisted of a test of orientation toward or aptitude for accounting, two levels of achievement tests, and the Strong Vocational Interest Blank. The Orientation Test and the Achievement Tests were specially constructed for this project. The Orientation Test yields a verbal score, a quantitative score, and a total score. The verbal part is based on knowledge of vocabulary and ability to read business materials. The quantitative section measures knowledge of arithmetic used in business situations. The working time for this test is fifty minutes. Form A of the Orientation Test was used in twenty-nine colleges in the fall of 1946, and thus fall college norms are available for that form. Form B was employed in the spring program in the colleges.

The Achievement Test, Level I, contains the following parts: account classification; accounting vocabulary; arithmetic of comparative profit and loss statements; bookkeeping; entering and posting; bank reconciliation; adjustments in ten column worksheet; analysis of depreciation histories; and tracing the effect of errors. The working time for the test is two hours. Total scores are reported for this test.

The Achievement Test, Level II, consists of eleven parts as follows: fundamental classification relationships; entering transactions in books of original entry; posting books of original entry; analysis of adjustments; analysis of comparative operating statements of branches; cash record and bank reconciliations; analysis of depreciation histories; tracing the effect

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[1] A Study of the Ability of Accounting Students: Results of Orientation Test, Form A, in Schools of Business of Twenty-nine Colleges, Fall Semester, 1946. Bulletin No.1. Committee on Selection of Personnel, 437 W.59th St.,New York 19,N.Y.

[2] Leo A. Schmidt, Objective Examinations in Professional Accounting. Preliminary Edition for Review and Criticism. Bulletin No.2. Committee on Selection of Personnel, 437 West 59th St.,New York 19, N.Y. June, 1947.

of errors; inventory methods; influence of inventories on net profits; comparison of inventory methods; and auditing. This test yields total scores. The working time is four hours.

The Strong Vocational Interest Blank was used in an extensive experiment in the earlier stages of the project, and norms are available for public accountants on twenty-seven occupational scales.

The Testing Program in the Colleges

For the colleges, two testing programs were offered--a College Accounting Testing Program for students below the senior year and a Professional Accounting Testing Program for graduating seniors. The College program consisted of the Orientation Test, the Achievement Test, Level I, and the Strong Vocational Interest Blank. The Professional program included the Orientation Test, the Achievement Test, Level II, and the Strong Vocational Interest Blank. Thus, the two programs were similar except for a difference in achievement tests used.

The total amount of time required for these tests was approximately four hours for the College program and six hours for the Professional program. The colleges were free to use any part of the program, although they were advised that it was preferable to have the seniors take all three tests so that a complete record on each individual would be available in the project offices.

Scoring services were provided by the project offices for all the tests in the spring program. There was no charge for the tests or services, except in the case of the Strong Vocational Interest Blank below the senior year where the charge was $1.80 a student. Colleges having an urgent need for the test scores were permitted to do local scoring, with the understanding that they should return all materials to the project offices when they had completed the scoring and had made a record of the results for their own use. All tests used in the norms were rescored in the project offices to insure accuracy.

Preliminary reports using tentative norms and local norms were mailed to each college as rapidly as the scoring for individual colleges was completed. When the scoring for all participating colleges had been completed and norms had been computed, final reports were sent to the different institutions. The reports consisted of distribution sheets showing the distributions of scores and the medians and quartiles of the scores of class groups and lists of the scores and percentiles of individual students on the Orientation and Achievement Tests, as well as individual profile charts for the results of the Strong Vocational Interest Blank. Individual card reports were also made up for all seniors and either sent directly to the individuals concerned or mailed to the colleges for redistribution to the individual students.

Testing Outside the Colleges

The Professional Accounting Tests, consisting of the Orientation Test, the Achievement Test, Level II, and the Strong Vocational Interest Blank, were made available for use on or about May 24, 1947, in public accounting firms of three cities--New York, Chicago, and Detroit. It was also possible for firms in other cities where colleges using these tests were located to have members of their firms tested along with the college students. Tests

were taken by staff members of nine firms in New York City, one Chicago firm, and one firm in Des Moines, Iowa (tested at Drake University). In addition, staff members of six firms in the Detroit area were tested under the auspices of the Regional Office in that city.

Approximately three-fourths of the employed men taking the tests were junior or semi-senior accountants. On the average, the individuals in the group tested had had between three and four years of experience in accounting work.

II

SUMMARY OF TEST RESULTS IN COLLEGES AND FIRMS

The distributions of the scores of the college students and employed individuals on the Orientation and Achievement Tests in the spring of 1947 are shown in Tables I, II, and III. The medians, quartiles, tenth and nintieth percentiles, and ranges of the scores are reported at the bottom of the tables. The medians and the inter-quartile ranges are also shown graphically.

Orientation Test

The distributions of the verbal and quantitative scores on the Orientation Test are given in Table I, and the distributions of the total scores are shown in Table II. All the college students took Form B of this test, while in the employed group, Form A was used, except with those individuals who were tested in certain colleges along with the college students. As will be seen from the totals at the bottom of the tables, more than 5,000 students in the first year of accounting were tested; whereas a total of only about 1,500 students and employed persons took the tests at the other levels.

As is nearly always found when large groups are measured with an aptitude test, the scores are widely distributed at each level, and there is much overlapping in the distributions. The possible range of raw scores is as follows: verbal, 0-100; quantitative, 0-30; total, 0-130. It will be seen that the greater part of the possible range is included in each of the distributions. In fact, at the first-year level, the entire range of quantitative scores from 0 to 30 is covered, and the verbal scores range from 0 to 96 out of a total of 100 points.

Notwithstanding the fact that the distributions overlap through the greater part of their length, the median scores of the college students increase significantly from one level to the next. So far as total scores are concerned, the increase from the first to the second year of accounting (including 183 third-year students) is 7.7 raw score points, and the gain from the second year to the senior year is 11.8 points. It is apparent, therefore, that although the Orientation Test is designed to measure general aptitude for the accounting field rather than achievement, the students with the larger number of accounting courses do, on the average, make the higher scores. These differences are probably due both to growth and to the fact that there is a considerable amount of elimination of the poorer students at the higher levels.

When the medians obtained on Form B of the Orientation Test in the colleges in the spring of 1947 are compared with the medians on Form A in the fall of 1946, as reported in Bulletin No. 1, it is to be noted that the spring medians are significantly higher than those resulting from the fall testing. At the first-year level, for example, the difference in median total scores is 7.9 points. A part of this difference is due to a slight difference in the difficulty of Forms A and B. Although the two forms were constructed to be equivalent in difficulty, a study based on two equivalent groups of approximately 675 students each showed Form B to be slightly the easier. The difference in total scores at the medians was 2.7 points.

Other factors which may help to account for the difference between the fall and spring results are (1) growth of individual students between the

fall and spring testing programs, (2) practice effect in the case of individuals who were tested with Form A in the fall and Form B in the spring, and (3) a possible difference in the selectivity of some of the colleges taking part in the two programs. The last of these three suggested factors may be insignificant, but the other two in all probability have some influence on the results.

A comparison of the aptitude of the college students and the employed individuals as measured by the Orientation Test is complicated by the fact that the larger employed group took Form A, which, as already noted, is slightly higher than Form B. However, so far as conclusions are warranted by the incomplete data available, the results indicate that the aptitude of the employed group is closely similar to that of the seniors. The median and inter-quartile range of the scores of the employed individuals on Form A are near but slightly lower than the median and inter-quartile range of the scores of the seniors on Form B. The median of the small group of employed accountants on Form B is 4 points above the senior median.

Achievement Tests

The distributions of the scores on the two levels of the Achievement Tests, Form A, are shown in Table III. As in the case of the Orientation Test, very wide ranges of the scores are to be noted. The possible range of scores on the Level I test is 0 to 120, and that on the Level II test is 0 to 150. Each distribution covers all but a few points of the possible range. Some individuals know almost no accounting as measured by these tests, while others were able to answer nearly every question.

For the Level I Achievement Test there are two distributions. One of these includes the scores of 4,071 first-year accounting students, and the other is composed of the scores of 928 students, including 745 second-year accounting students and 183 students who were in their third year of study. The results for the third-year group were combined with those for the second-year students, since the distributions were not significantly different.

The ranges of the first- and second-year distributions on the Level I test are closely similar. The highest score in the first-year distribution, 116, is equal to the highest score in the second-year distribution. The student with the lowest score in the second-year group is below nearly all the students in the first-year group.

There is, however, a marked difference in the medians for the two groups. The second-year median, 75.6, is 20.7 raw score points above the first-year median and 6.9 points above the third quartile for the first-year distribution.

It is interesting to compare the Orientation Test and the Achievement Test results for the first and second years of accounting. A comparison of this kind is limited by the fact that the groups taking the Orientation and Achievement Tests were not exactly the same, but since the population is rather large, the groups probably represent equivalent ability. The median total score of the second-year group is equivalent to a first-year percentile of 65; whereas, on the Achievement Test, the second-year median corresponds to a first-year percentile of 85. In other words, the average achievement in the second-year group (including the third-year students) is definitely higher than one would predict on the basis of the aptitude measurement.

Somewhat similar observations can be made concerning the distributions of the scores of the college seniors and the employed accountants on the Achievement Test, Level II. The difference in the range of the scores of the two groups is small, but the medians are significantly differentiated. It will be recalled that it was noted in the discussion of the Orientation Test results that there seemed to be little difference between the college seniors and the employed accountants in aptitude. On the Achievement Test, the median for the employed accountants is 13.2 raw score points above the median for the college seniors. The median for the employed individuals corresponds to a college senior percentile of 68. In other words, the average employed accountant is above about two-thirds of the college seniors in total score on this test.

Notwithstanding the comparatively high median for the employed individuals, most of whom were junior and semi-senior accountants, a striking feature of the distributions is that there is a considerable number of scores that are quite low. Two of the employed individuals had scores close to zero, and several of the others obtained scores which would fall within the lowest tenth of the distribution for the college seniors. It seems rather surprising that individuals whose knowledge of accounting as measured by this test is so deficient are employed in the public accounting field. It is to be hoped that as the Professional Accounting Testing Program is continued, the use of a test of this kind at or before the point of employment will tend to help individuals who may not have the aptitude and background for this field to be guided away from accounting and into other types of activity.

TABLE I

DISTRIBUTION OF SCORES ON PART I, VERBAL, AND PART II, QUANTITATIVE, OF ORIENTATION TEST, FORM B*

	Verbal						Quantitative					
	Colleges			Emp. Accts.			Colleges			Emp. Accts.		
Score	1st yr.	2nd yr.**	Senior	Fm. A	Fm. B	Score	1st yr.	2nd yr.**	Senior	Fm. A	Fm. B
99-100											
96	1			1							
93	6	3	2	2	1						
90	9	1	6	2	1	30	24	4	7	2	1
87	33	3	4	5	1	29	70	20	15	8	
84	62	6	19	13	4	28	100	31	29	5	7
81	58	17	24	17	3	27	34	6	6	9	
78	113	14	41	14	1	26	140	45	35	10	5
75	115	19	28	11	4	25	189	43	49	12	1
72	138	21	29	13	2	24	251	51	44	10	1
69	147	33	28	25	3	23	258	36	49	8	5
66	197	21	37	16	2	22	176	37	22	20	
63	231	44	33	18	5	21	305	43	41	22	3
60	223	42	37	15	2	20	258	46	39	15	2
57	280	44	27	19	3	19	321	51	35	20	3
54	306	40	28	16	3	18	360	45	24	20	2
51	282	54	22	17		17	254	35	20	18	2
48	370	54	34	14	1	16	331	35	25	19	2
45	346	44	21	11	1	15	266	27	19	15	3
42	344	48	30	13	1	14	318	37	14	23	1
39	309	40	21	10	1	13	264	26	11	7	
36	349	38	22	7		12	266	18	10	6	1
33	252	40	9	5		11	240	11	5	8	2
30	258	17	9	2	1	10	209	12	8	7	
27	218	20	4	4	1	9	173	8	4	2	
24	169	9	3	1		8	162	15	5	1	
21	150	8	1	3		7	108	5	2	3	
18	111	7	2	1		6	85	2	1	3	
15	93	1				5	59	3	1	1	
12	65	2				4	33	1		1	
9	41	3				3	35				
6	27	1				2	16	1			
3	16					1	7		1		
0-2	9					0	16				
Total	5328	694	521	275	41	Total	5328	694	521	275	41
Q3	60.0	63.6	74.4	74.1	80.3	Q3	21.7	24.5	25.2	22.8	26.6
Md	47.2	51.8	62.2	62.9	68.3	Md	17.3	20.3	21.9	19.2	21.8
Q1	35.1	41.1	48.7	50.5	58.3	Q1	12.7	16.2	18.2	15.5	17.6
Range	0-96	7-95	18-95	18-96	29-93	Range	0-30	2-30	1-30	4-30	11-30
10%ile	24.4	33.1	39.3	40.4	45.3	10%ile	9.1	12.6	14.3	12.3	15.0
90%ile	72.0	74.1	81.3	83.2	86.2	90%ile	25.1	26.8	27.8	26.7	28.6

* The larger group of employed accountants took Form A.

** The distribution for the second year of study includes the results for 183 third-year accounting students who were not classified as seniors. Since the distribution of scores for this small third-year group was not significantly differentiated from the second-year distribution, the two distributions were combined.

TABLE II

DISTRIBUTIONS OF TOTAL SCORES ON ORIENTATION TEST, FORM B*

Score	Colleges			Employed Accountants	
	1st year	2nd year+**	Senior year	Form A	Form B
128-130					
124	1	1	1	1	
120	3	1	1		1
116	18	2	4	4	2
112	41	9	12	9	1
108	63	7	14	11	4
104	73	18	42	17	4
100	104	24	28	14	
96	128	26	46	14	5
92	174	24	32	16	2
88	196	44	38	20	1
84	236	43	38	18	4
80	260	39	37	18	4
76	294	48	31	17	5
72	325	57	34	18	1
68	342	57	30	19	1
64	405	48	30	21	2
60	366	52	25	18	
56	344	40	27	11	
52	380	48	14	6	1
48	330	38	13	7	1
44	277	21	10	6	2
40	240	18	9	4	
36	212	10	2	1	
32	153	6	2	1	
28	124	4	1	2	
24	92	4		1	
20	58	1		1	
16	36	3			
12	26				
8	16	1			
4	9				
0-3	2				
Total	5328	694	521	275	41
Q3	79.5	86.4	97.5	96.4	105.8
Md	64.0	71.7	83.5	81.0	87.5
Q1	49.1	58.0	67.6	66.0	77.8
Range	0-125	9-124	30-124	22-125	44-121
10%ile	36.4	48.1	56.2	55.0	64.2
90%ile	93.7	98.9	106.1	107.4	111.9

* The larger group of employed accountants took Form A.

** The distribution for the second year of study includes the results for 183 third-year accounting students who were not classified as seniors. Since the distribution of scores for this small third-year group was not significantly differentiated from the second-year distribution, the two distributions were combined.

TABLE III

DISTRIBUTIONS OF TOTAL SCORES ON ACHIEVEMENT TESTS, LEVELS I AND II, FORM A

Score	Level I, Colleges, First year	Level I, Colleges, Second year*	Score	Level II, College Seniors	Level II, Employed Accountants
120			150		
117			147		
114	1	3	144	2	1
111	3	6	141	6	4
108	7	6	138	6	9
105	11	25	135	4	9
102	12	27	132	13	14
99	22	36	129	18	26
96	29	39	126	15	21
93	34	31	123	21	24
90	54	42	120	23	16
87	72	56	117	30	19
84	81	40	114	28	16
81	99	51	111	16	12
78	115	62	108	16	14
75	137	49	105	24	16
72	166	46	102	25	15
69	158	46	99	25	15
66	169	50	96	26	16
63	244	54	93	26	10
60	222	39	90	26	5
57	223	36	87	19	17
54	249	28	84	16	6
51	245	33	81	25	12
48	223	21	78	25	8
45	225	26	75	13	5
42	223	15	72	21	11
39	198	21	69	18	12
36	164	10	66	14	5
33	174	12	63	21	4
30	131	5	60	17	8
27	107	4	57	13	6
24	80	2	54	11	4
21	49	3	51	14	4
18	58	1	48	18	4
15	39	2	45	9	2
12	22		42	6	2
9	15	1	39	9	2
6	5		36	4	1
3	4		33	5	1
0-2	1		30	6	2
			27	2	1
			24	5	1
			21	5	2
			18	1	2
			15		3
			12	1	1
			9	1	
			6		
			3		1
			0-2		1
Total	4071	928	Total	649	390
Q3	68.7	89.1	Q3	114.4	124.3
Md	54.9	75.6	Md	92.9	106.1
Q1	41.6	60.9	Q1	69.0	82.1
Range	0-116	9-116	Range	10-145	2-146
10%ile	30.6	46.9	10%ile	49.8	59.5
90%ile	81.5	99.9	90%ile	125.9	131.8

* The distribution for the second year of study includes the results for 183 third-year accounting students who were not classified as seniors. Since the distribution of scores for this small third-year group was not significantly differentiated from the second-year distribution, the two distributions were combined.

III

SCORES OF COLLEGE STUDENTS ON STRONG VOCATIONAL INTEREST BLANK

The Strong Vocational Interest Blank for Men was filled out in the spring of 1947 by 630 graduating seniors distributed among 29 colleges and universities and 831 underclassmen in schools of business of nine institutions. It will be of considerable interest and value to determine how the interest scores of the college students compare with those of practicing accountants.

Early in the project the median scores on twenty-seven occupational scales for the Strong blank were found on the basis of the results for 1,000 public accountants, including 200 partners, 200 managers, 200 senior accountants, 200 semi-seniors, and 200 junior accountants. These medians were graphed on a specially arranged form which was then used in reporting the scores of individuals on this test.

In order to compare the results for college accounting students with those for practicing accountants, 100 first-year accounting students and 100 seniors were chosen from the entire group of students who took the Strong blank. These students were distributed among six colleges. Since the machine-scoring procedure used in connection with the spring program made it possible to score simultaneously with a group of twenty-five scales but not with a larger number, twenty-five of the original twenty-seven scales were chosen for this aspect of the study. The scales omitted were real estate salesman and Y.M.C.A. secretary.

The medians of the scores of the underclassmen and the seniors on twenty-five occupational scales are shown in Figure 1 in relation to the median line for 1,000 public accountants.

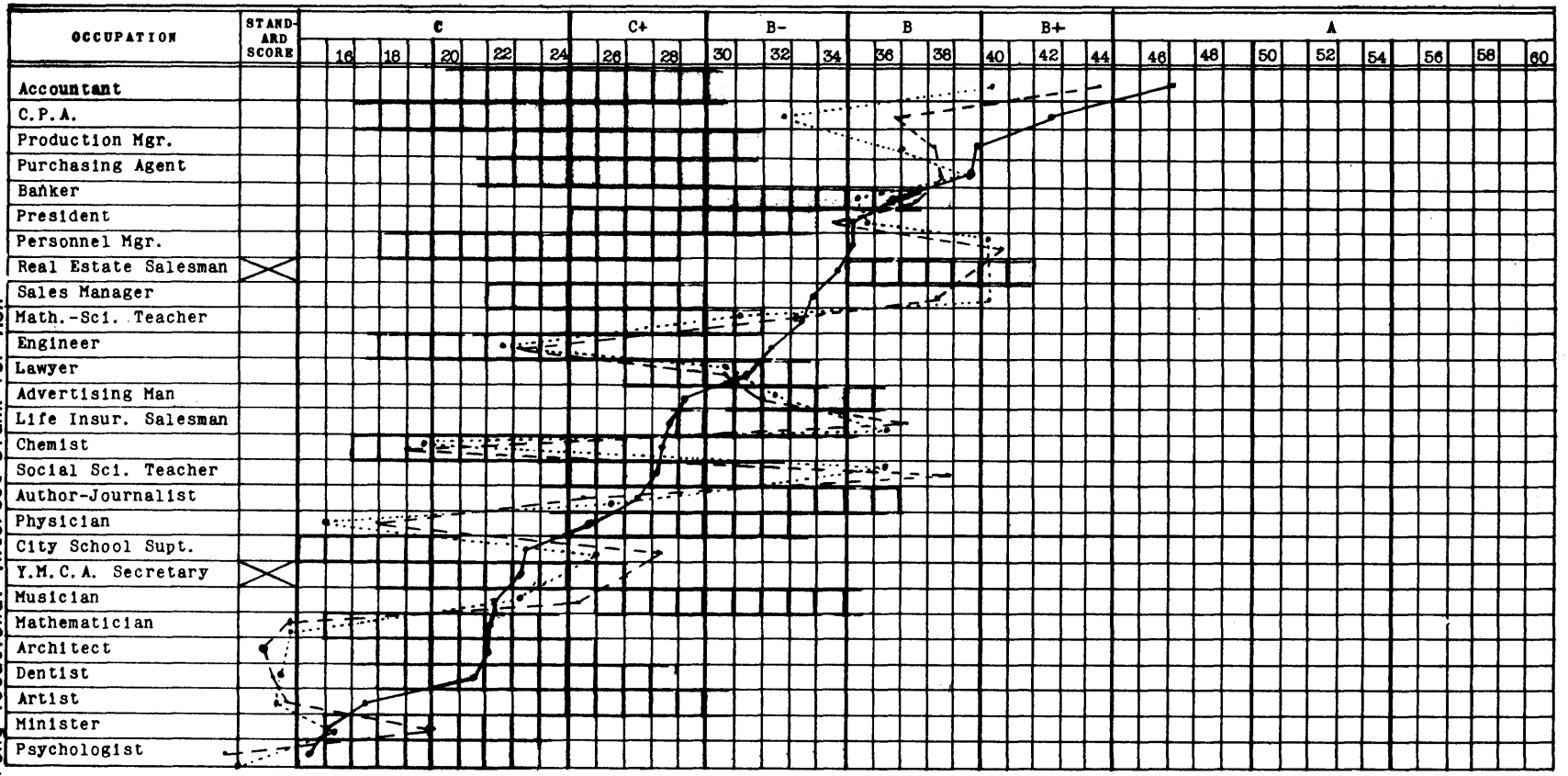
It will be observed, in the first place, that there is close agreement between the medians for the first-year accounting students and the seniors. The lines connecting the medians for these two groups have their peaks and valleys in the same occupations.

A second observation is that, with a few exceptions, the medians of the seniors tend to be a little higher than those for the first-year accounting group. The largest differences are on the accounting and C.P.A. scales The seniors surpass the younger group by 4.1 standard-score points on each of these two scales.

A third observation is that both groups of students tend to have higher interest scores in the accounting field than in the other fields. For both the seniors and the first-year students, accounting ranks first among the twenty-five occupations. C.P.A. ranks ninth among the twenty-five occupations in the interests of the seniors and tenth in the interests of the first-year group.

A fourth observation--and the most important of all--is that notwithstanding rather wide divergence in the case of individual scales, the general trend of the median interest ratings of the students bears considerable similarity to that of the employed accountants. The students have much

Figure 1. Median Scores on 100 First Year Accounting Students and 100 Graduating Seniors on Strong Blank



Report on Strong Vocational Interest Blank for Men

Your occupational interests are recorded under the heading "standard score" and opposite the appropriate occupations.

The higher a score to the right of the shaded area the greater the certainty that one has the interests characteristic of that occupation. The lower the score to the left of the shaded area the greater the certainty that one does not have the interests of the occupation. Scores falling within the shaded area are indeterminate: they help sometimes to show, along with other scores, the general trend of one's interests in an occupational group. But generally they can be ignored.

Standard scores of 45 and above are rated A, meaning one has the interests characteristic of men successfully engaged in the occupation. Ratings of B+, B, and B- also indicate possession of the interests characterizing men in those occupations, but at the same time they represent less and less assurance that the classification is correct.

About 15 per cent of men known to be successful rate B+; about 9 per cent rate B; about 4 per cent, B-; and about 2 per cent C+ and C. Occasionally a successful man rates below C+. On the other hand, many successful men rate B-, B, and B+, and a few rate A in occupations other than the one in which they are engaged.

The interest profile of an accountant or of a man considering the accountancy profession should be compared with the median profile for 1,000 accountants as shown by the solid black line.

Men's interests change very little from 25 to 55 years of age. They change somewhat from 20 to 25 years and much more so from 15 to 20 years. Consequently, the younger the man, particularly below 20 years of age, the less certainly can his interests be identified in terms of some occupation. Such changes in interests as take place are more likely to result in higher ratings than the reverse.

The ratings from this test should not be viewed as conclusive; they are not guaranteed as correct. Instead they should be viewed as merely suggestive and to be considered in the light of all other information bearing upon one's vocational choice. Occupations rated A and B+ should be carefully considered before definitely deciding against them; occupations rated C, C+, and B- should be carefully considered before definitely deciding to enter them. Remember only a few from among all the hundreds of occupations are reported on here.

----Seniors; .....First year accounting students.

_____Median Scores of 1,000 Accountants (200 Partners, 200 Managers, 200 Seniors, 200 Semi-Seniors, 200 Juniors)

higher median scores on the business scales on which practicing accountants are relatively high--accountant, C.P.A., production manager, purchasing agent, banker, president of a manufacturing concern, personnel manager, and sales manager--than on those for which the men in the employed group are low--mathematician, architect, dentist, artist, minister, and psychologist.

On the other hand, there are some noteworthy differences. The medians for both groups of students are definitely lower than those for the practicing accountants on three scales of a scientific nature--engineer, chemist, and physician--and significantly higher on four scales--personnel manager, sales manager, life insurance salesman, and social science teacher.

It should be kept in mind that all these data are concerned with medians. In all the groups there is a wide range in the interest scores of individuals on each of the twenty-five scales. It is possible for an individual man to be a successful accountant, even if the pattern of his interest scores diverges widely from the median line for public accountants. Other things being equal, however, the prognosis of success is more favorable if one has the interests of those successfully engaged in the occupation concerned. Needless to say, the interest ratings should be regarded as supplementary to other information and should be considered in conjunction with aptitude and achievement scores and ratings of personal factors.

IV

RESULTS OF ORIENTATION TESTS AND ACHIEVEMENT TESTS IN INDIVIDUAL COLLEGES

The distributions of the total scores of the students in the participating colleges on the Orientation and Achievement Tests are shown in Tables IV to IX inclusive. For each type of test there are three tables, one for first-year accounting students, one for second- and third-year students, and one for graduating seniors. The colleges are designated by the code numbers at the top of the tables. Each college has been apprised of its own number. A college retains the same code number throughout all the tables in which it has distributions.

The raw score scale is given at the left and right of each table. The broken lines running horizontally across the table indicate the Q 3 or seventy-fifth percentile, the median or fiftieth percentile, and the Q 1 or twenty-fifth percentile for the distribution of scores of the entire group of participating students.

At the bottom of each column, data are shown concerning the total number of students in the group, the Q 3, the median, the Q 1, and the range of the scores in that particular college. The median and the inter-quartile range are also shown graphically beside each distribution.

It will be observed that there are very large differences in the number of cases in the various distributions. In most instances these differences reflect differences in the size of the student population in the different colleges, but a few of the small distributions result from the fact that, for one reason or another, not all the students taking accounting at a particular level were tested. High median scores in small groups, therefore, do not necessarily mean that the general performance is high in the colleges from which these samples were drawn. It may mean only that there was a certain amount of selection in the students taking the tests. The selection may have been unintentional on the part of the colleges concerned. For example, if a college placed the taking of the tests on a voluntary basis, it is probable that, in general, the better students would report for the test and the poorer ones would neglect to take it. In order to obtain entirely fair comparisons among colleges, it is necessary to have complete groups tested, but circumstances sometimes make the testing of all students virtually impossible when tests of this kind must be handled within the regular college schedule. The testing situation is likely to be more difficult near the end of the college year than at other times because of the many extra demands upon the time of both students and instructors.

Another factor which somewhat limits the comparability in the case of certain institutions is the environmental situation under which the tests were administered. Conditions in many colleges are so crowded at present that it is difficult to find sufficient space for the testing of large groups of students. In one or two instances it is known that because of unavoidable conditions the testing situation was not good, and it is presumed that similar difficulties may have arisen in the administration of the tests in other colleges.

When allowance is made, however, for the fact that certain distributions of scores may not be truly representative of aptitude or achievement in the colleges concerned, it is apparent that there are wide differences among the colleges on the Orientation Test, the Achievement Test, Level I, and the Achievement Test, Level II.

The distributions of the total scores of first-year accounting students in thirty-six colleges on the Orientation Test are shown in Table IV. It is interesting to see that in College 1, more than three-fourths of the students have aptitude scores that fall within the highest quarter of the distribution for the entire group of more than 5,000 students; whereas, in Colleges 35 and 36, more than 60 per cent of the scores fall within the lowest quarter.

On the other hand, it should not be overlooked that there is much overlapping in the distributions even between the colleges at the extreme ends of the table. College No. 2 is, on the average, definitely high, since the median is at the Q 3 for the national norms, but the group contains a few students who are quite low in aptitude score. Colleges 35 and 36, whose median scores are definitely below the first quartile, have several students whose scores fall within the top quarter of the distribution. A student in College No. 33, where the median score is slightly below the first quartile, is among the four highest in the group of over 5,000 first-year accounting students.

Table V contains the distributions of the Orientation Test total scores of second- and third-year students of accounting in twenty-two colleges. Most of these groups are relatively small. The differences among the colleges are not as striking as they were in the case of the first-year groups. The differences are, however, fairly large. The median total score for College No. 4 is fairly near the seventy-fifth percentile for the entire group, while the medians of the distributions in the three colleges to the right, Nos. 39, 33, and 29, are below Q 1.

In Table VI, the distributions of total scores made on the Orientation Test by graduating seniors in sixteen colleges are reported. Here the contrast among the colleges is greater than it was for the second- and third-year students, although not as large as the differences at the first-year level. The seniors in College 1 and in the small group in College 40 have medians slightly above the seventy-fifth percentile for all the cooperating seniors. The medians in Colleges 29 and 44 are very near the twenty-fifth percentile.

On Achievement Test, Level I, there are distributions of scores for the first-year students in thirty-six colleges as shown in Table VII. Here the differences are again very large, just as they were in the case of the first-year students on the Orientation Test, although not exactly the same group of colleges is involved in the two tests. The medians for Colleges 45 and 13 are very high, and those for Colleges 11 and 12 are somewhat above Q 3. College 22 has a median at Q 1, and the medians for Colleges 47 and 48 are not far above this point.

The results on Achievement Test, Level I, for second- and third-year accounting students in thirty-one colleges are given in Table VIII. This table carries forward the impression of wide differences in medians but great overlapping in distributions obtained from the other tables. The median of the distribution for College 18 is above the seventy-fifth percentile for the entire group, and five of the other colleges have medians very close to Q 3. The medians in College 48 and 30 are considerably below Q 1, although a few individual students in these relatively small groups have high scores.

There are especially large differences in the median scores of the graduating seniors in twenty-five colleges on Achievement Test, Level II, as shown in Table IX. The medians for the seniors in Colleges 1, 2, 3, and 4 are above Q 3, but in the first three colleges the distributions almost certainly do not represent all the graduating seniors. The senior groups in Colleges 44, 20, and 52 have medians considerably below Q 1. The senior group in College 44, however, includes one student who, according to this test, is among the seven highest in knowledge of the principles and procedures of accounting.

Although on each test, the scores of the students in each college are widely spread, naturally the variability in any one college tends to be somewhat less than that for the entire group. However, in a few colleges, the results are fairly representative of the entire group of students taking a test at a particular level. For example, the distribution of the Orientation Test scores of the first-year accounting students in College 19 approximates rather closely the distribution for the entire group of colleges. Local percentiles based on the scores of the students in this one college would be closely similar to "national" percentiles.

The readers of this report may find it interesting to compare the Orientation Test distributions given in Tables IV, V, and VI with the charts shown in Figures 2, 3, and 4 of Bulletin No. 1, which presented the results of the Orientation Test in schools of business in the fall of 1946.

TABLE IV

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN THIRTY-SIX COLLEGES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
128-130																			1																			128-130
124	1																		1																			124
120	1			1															3														1				120
116	10	1		2		1	1		1			1	1						2	1			1			1											116
112	23	5					4			1			1		1				1						1		2					1					112
108	25	6	1	5	2	4	7		1	2	2		1		2				3						2					1		1					108
104	33	10		2		4	6		4	3				1					2	1			3	1	1		1			1			1				104
100	40	13	1	8		5	7		1	3	1		6	1	1			1	6			3	5	1	4		1		1	2							100
96	24	16	1	9		12	17	1	4	4	1		4	3	2			1	4			3	7	2	1	2	4		1	5			2	1	3		96
92	35	22		16	1	2	26	1	7	7	3		8	7	2		1	2	6	1		2	9	4	2		5		3	4	2	1	1	1	2	1	92
88	31	24		14	2	19	24	2	2	7	3	1	6	7	2		2	1	9	4	1	6	14	8	1		5	4	1	7		1		3	1		88
84	28	30	4	23	1	19	34		10	7		1	13	8	5		2	2	6	3	2	5	14	4	8	2	8		3	7		2	3			2	84
80	24	38	1	21	1	15	44		7	16		2	13	15				4	12	6	1	3	14	5	5	3	4	2	4	11	7			1	3		80
76	19	32	1	19	2	19	49	2	9	13	2		12	17	7	1	4	1	9	16	1	8	19	6	6	9	3	1	6	23	3	1		1	3	3	76
72	20	25	5	27	2	17	49	1	11	14	3	1	10	12	6	1	3	6	20	17	1	6	26	9	4	4	18	2	6	15	2	1		5	7	4	72
68	11	24	2	30	1	21	54		14	11	2	5	13	22	4	1	4	4	12	18	2	6	33	10	10	6	11	3	10	19	4		2	2	3	4	68
64	10	26	2	28	2	19	57		13	19	1	2	17	22	7	3	8	5	22	22	3	4	35	11	13	13	13	2	10	32	4	6	2	4	5	4	64
60	4	16	3	21	1	19	53	1	12	14	3		7	12	2	2	4	5	14	12		12	34	16	14	8	15	1	19	23	6		6	6	15	9	60
56	4	17	4	27	2	14	43	2	7	10	4	3	19	12	9	1		4	15	18	1	5	29	20	28	11	16	2	12	24	3	4	3	4	7	5	56
52	2	12	2	12	3	18	49		16	9	1	1	13	24	3		4	4	16	16	1	10	37	19	14	6	15	4	22	35	5	2	2	3	22	13	52
48	1	11	2	13	1	14	35		9	15	4	3	9	12	6	1	4	3	14	13	3	6	27	14	14	7	26	3	12	27	3	7	5	6	16	10	48
44				16		15	26	1	5	12	1	1	13	9	4		2	2	11	13	2	9	28	12	13	10	17	3	15	33	8	3	5	4	8	6	44
40		4		9	1	8	15	2	5	11	2	1	5	6	3	1		2	11	8	1	7	27	7	7	13	11	4	14	33	4	2	4	9	11	11	40
36				6		9	7	1	5	9	2		3	6			6	2	13	6	1	2	24	7	9	3	15	2	9	24	5	4	4	7	22	11	36
32		1		3		3	8		3	2			6	4	3		1	1	4	3	2	5	20	1	11	6	5	1	4	14	2	5	8	5	21	11	32
28		1		1		1	3		1			1	8	8	1			2	4	2		5	14	2	6	5	5		8	12	5	3	4	7	15	10	28
24				1	1				2	2		1		5	1				8	1		2	5	5	3	4	5	1	2	6	2	3	1	4	17	12	24
20						1	2			3			2				1	1	1	1			1	3	4		3	1		6	1	2	4	1	16	8	20
16							1						1	1	2				1			1	2	1		1			1	2	1	1		3	10	9	16
12									1				2													1	3			2				2	7	9	12
8							1																				1		1	1				5	7	8
4																																			5	4	4
0-3																																				2	0-3
Total	346	334	29	314	23	259	622	14	150	194	35	24	192	214	73	11	46	53	225	181	22	110	428	168	181	114	213	36	164	369	67	49	58	79	224	155	Total
Q3	104.8	90.3	83.0	84.3	85.0	84.3	81.3	89.0	79.8	80.4	89.7	72.0	81.2	77.3	78.1	69.0	72.7	75.2	77.2	72.6	74.0	77.3	72.8	71.2	67.9	67.2	71.5	72.0	65.6	68.6	69.3	64.5	62.3	62.8	54.7	53.9	Q3
Md	94.2	79.8	71.0	70.7	70.0	69.6	68.8	68.0	66.8	66.1	66.0	66.0	65.9	65.5	65.4	64.7	64.5	64.4	64.1	63.2	62.0	61.0	60.0	58.6	57.4	56.4	56.1	55.0	54.9	54.8	54.0	48.9	47.2	45.5	38.9	38.0	Md
Q1	82.6	67.3	59.3	58.6	55.7	55.1	56.8	46.0	53.6	50.5	51.8	50.7	51.6	52.4	50.8	59.0	49.5	52.3	48.9	51.5	47.0	46.4	46.0	49.1	45.6	42.6	45.2	44.0	44.5	43.1	40.8	34.6	34.8	34.2	27.1	23.9	Q1
Range	48-125	29-116	48-109	27-121	27-110	21-116	10-116	38-97	15-117	20-112	37-110	27-112	15-113	19-107	16-114	41-78	22-95	21-100	14-116	23-106	33-91	18-103	17-114	18-105	21-112	15-98	8-116	23-91	11-101	9-109	19-94	19-114	20-120	14-99	4-98	2-93	Range

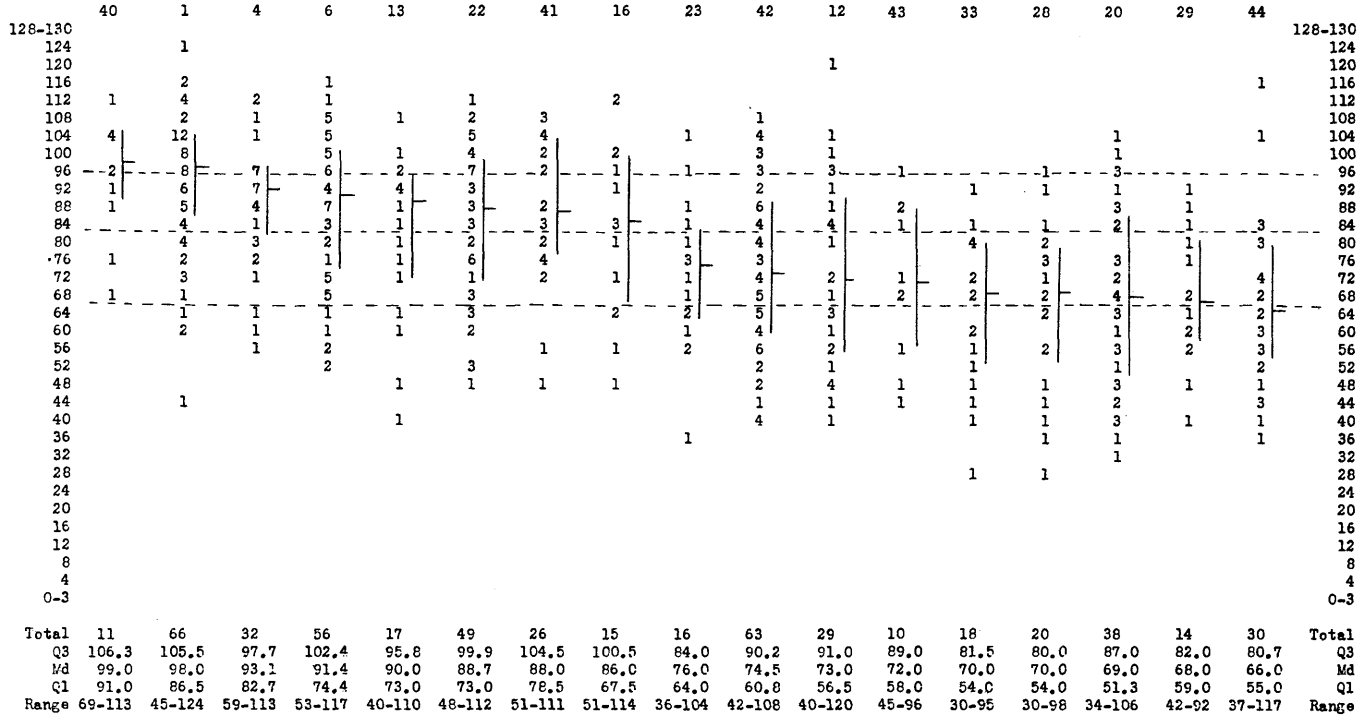
TABLE V

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY SECOND- AND THIRD-YEAR STUDENTS OF ACCOUNTING IN TWENTY-TWO COLLEGES

	4	9	12	18	37	13	30	5	9	22	11	18	26	28	16	15	38	30	39	33	33	29	
128-130																							128-130
124	1																						124
120										1													120
116						1	2																116
112	4				1		1												1		1		112
108	1			1			2	1		1					1								108
104	6	1	1	1	1		7									1							104
100	7		1	3	1	1	1	2	2	5					1								100
96	6	1		2	1	1	5	2	1	1		1		1	1	1	1	1		2			96
92	5	1		3	2	3	4	2		1			1					1		1		1	92
88	5		4	4	5	4	11	2		2	2	2			1	2			1		1	1	88
84	7	1	2	5	2	1	8	2		2	1		3	1	3	1	1	1	1	1	1	1	84
80	12		1	7	5	1	5			2			1	2	2		1	1	1				80
76	6	2	4	4	6	5	12			5		2		5	2		1			1	1	1	76
72	12		1	7	6	8	10	2	2	5	1	2	2	5	2		2			1	1		72
68	3	2	4	2	2	3	9	4	1	8	4	2	3	1	2	1	1	1	3		3		68
64	5			6	1	2	13		1	2	1	1	5	5	5	1		2			2	2	64
60	3	1	2	7	6	1	11	1	1	3	1	2		1	4	1	3		3		2		60
56	3		1	4	2	1	5			6	1	2		2	1	2	4		6	1	1	1	56
52	5		2	2	7	1	5	1	1	4			1		1		1	3	3	5	4	2	52
48	3			4	1	3	9	1		1		2	1	3	2	1	1		5		2	2	48
44	1			1	1	3	1	2	1	2		1		1	2	1	2		2	1	2	1	44
40				2	2	1	4	1		1			1	1	1	1	1		1	1	1	1	40
36	1				1		1							1	2			2	1		2		36
32			1				1	1							1						1	1	32
28		1		1		1	2							2									28
24	1					1	1	1													1		24
20							1																20
16													1					2					16
12																							12
8															1								8
4																							4
0-3																							0-3
Total	97	10	24	66	53	42	131	25	10	52	11	17	19	31	35	13	19	14	28	14	26	14	Total
Q3	96.5	94.0	88.0	86.0	83.8	86.0	88.1	93.5	98.0	84.0	85.0	77.5	81.0	77.0	80.5	89.5	74.5	82.0	66.0	86.0	70.0	78.0	Q3
Md	81.8	78.0	77.0	74.3	74.3	74.0	73.0	73.0	72.0	71.5	70.5	69.0	68.7	67.6	66.0	66.0	60.7	60.0	57.3	56.0	56.0	56.0	Md
Q1	71.0	69.0	66.0	61.4	58.5	58.0	61.0	53.0	62.0	59.3	67.0	58.5	64.6	51.7	51.5	56.5	55.0	39.0	50.4	53.2	47.0	49.0	Q1
Range	26-124	30-104	33-106	31-109	36-112	27-116	22-118	24-111	45-101	42-122	58-91	46-98	19-92	30-96	9-108	43-105	43-96	18-96	39-112	42-97	27-114	35-94	Range

TABLE VI

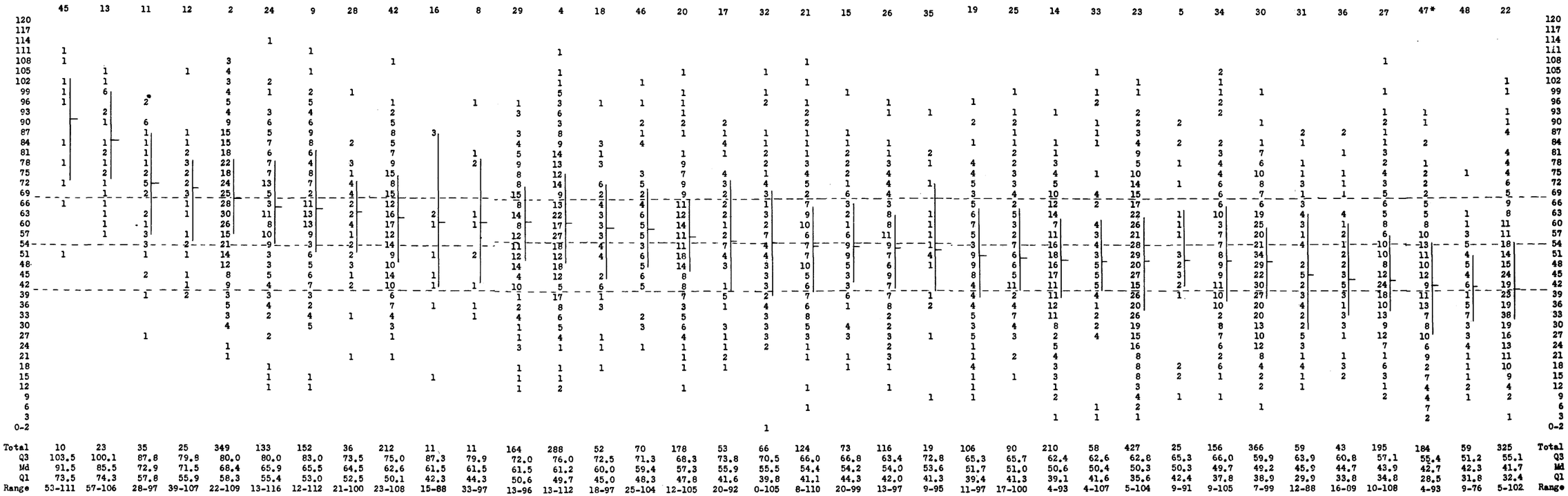
DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY GRADUATING SENIORS IN SIXTEEN COLLEGES



	40	1	4	6	13	22	41	16	23	42	12	43	33	28	20	29	44	
128-130																		128-130
124		1																124
120											1							120
116		2		1													1	116
112	1	4	2	1		1		2										112
108		2	1	5	1	2	3			1								108
104	4	12	1	5		5	4		1	4	1				1		1	104
100		8		5	1	4	2	2		3	1				1			100
96	2	8	7	6	2	7	2	1	1	3	3	1		1	3			96
92	1	6	7	4	4	3		1		2	1		1	1	1	1		92
88	1	5	4	7	1	3	2		1	6	1	2			3	1		88
84		4	1	3	1	3	3	3	1	4	4	1	1	1	2	1	3	84
80		4	3	2	1	2	2	1	1	4	1		4	2		1	3	80
76	1	2	2	1	1	6	4		3	3				3	3	1		76
72		3	1	5	1	1	2	1	1	4	2	1	2	1	2		4	72
68	1	1		5		3			1	5	1	2	2	2	4	2	2	68
64		1	1	1	1	3		2	2	5	3			2	3	1	2	64
60		2	1	1	1	2			1	4	1		2		1	2	3	60
56			1	2			1	1	2	6	2	1	1	2	3	2	3	56
52				2		3				2	1		1		1		2	52
48					1	1	1	1		2	4	1	1	1	3	1	1	48
44		1								1	1	1	1	1	2		3	44
40					1					4	1		1	1	3	1	1	40
36									1					1	1		1	36
32															1			32
28													1	1				28
24																		24
20																		20
16																		16
12																		12
8																		8
4																		4
0-3																		0-3
Total	11	66	32	56	17	49	26	15	16	63	29	10	18	20	38	14	30	Total
Q3	106.3	105.5	97.7	102.4	95.8	99.9	104.5	100.5	84.0	90.2	91.0	89.0	81.5	80.0	87.0	82.0	80.7	Q3
Md	99.0	98.0	93.1	91.4	90.0	88.7	88.0	86.0	76.0	74.5	73.0	72.0	70.0	70.0	69.0	68.0	66.0	Md
Q1	91.0	86.5	82.7	74.4	73.0	73.0	78.5	67.5	64.0	60.8	56.5	58.0	54.0	54.0	51.3	59.0	55.0	Q1
Range	69-113	45-124	59-113	53-117	40-110	48-112	51-111	51-114	36-104	42-108	40-120	45-96	30-95	30-98	34-106	42-92	37-117	Range

TABLE VII

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL I, FORM A, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN THIRTY-SIX COLLEGES



*May not be representative of true achievement due to unfavorable examination conditions.

TABLE VIII

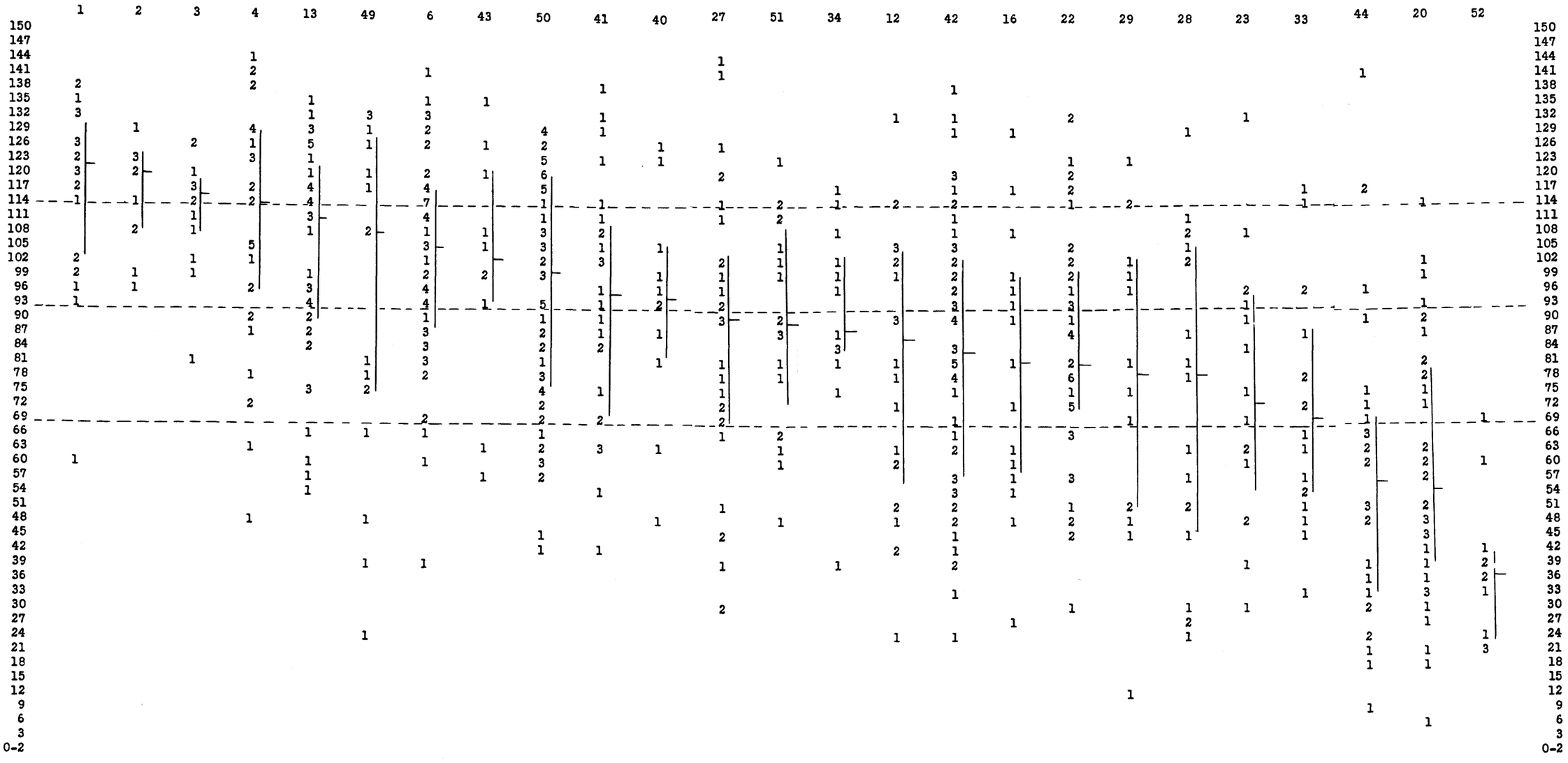
DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL I, FORM A, BY SECOND- AND THIRD-YEAR STUDENTS OF ACCOUNTING IN THIRTY-ONE COLLEGES

	18	4	13	9	13	26	11	9	49	42	24	15	12	18	47*	27	37	28	35	39	29	5	38	16	22	30	33	33	47*	48	30	
120																																120
117																																117
114		1							1								1															114
111		1	1			1				1							1															111
108		2							1				1	2																		108
105	1	5	3	2	3	1				1	6	1		1	1	2			1			1			1	1						105
102	1	6	1		2	2		1	1	4	1	1		2		1		2				1	1		1	2		1				102
99	3	11	1		2	1	1		1	2	2			3		3			1			1	1	2			1		1			99
96	1	9		1	2			1	2	4	2	1	3	4	1		2	1	1	2		1	1		2	1						96
93	2	5	1	2	2	1	2	1	4	1	1		3	1	1		1	1		1		1		1	1	3	1	1	1		1	93
90	2	6			2		1	1	2	2	3	2	3	4	3	3	3		2		1	1	1	3		2	1	1	1			90
87		3	2		4	5	2		1	4	5	1		3	4	2	7		3		1	1	1	1	2	9			3		1	87
84	1	4			3				4	7	2			4	1	2	4	5	1			1	1	1	3	6			3	1		84
81	1	7	1	2	2		3	2	4	2	2		1	3	3	2	2	2	1	1		1	1		1	9	3	1	1			81
78		2	1	2	2	2		1	4	3	3	1	2	7	4	3	4	3	3			2		2	5	11	3		2			78
75	1	6	1		3				1	3	4			5	5	3	7		1	4	1			1	5	5		1	3			75
72	1	4	1			1			2	5		2	1	5	1	3	4	3	3	2	1		2	2	3	4	1		3	1		72
69		6	2		1	2			5	1	3	1	1	1	1	1	1		5	5	4	2		1	1	4	1		3	2		69
66	1	1			1		1		4	3	4	1	1	1	1	4	4	4	2			1	3	6	2	8	1		4	1	1	66
63	1	3					1	1	1	3	5			4	1		2	1	2	3	1	3	1	2	3	7	4	2	3	3		63
60		1			1					5				3	2	3	2	1	2		1	2		3	2	9	2	1	10	2	1	60
57	1	4							1		2		2	1		1	4	2	2	1	2		1	1		9	1	1	4	1	2	57
54		2								2			1	2	1	1	2	1	2	2			1	1	2	7	1	1	5	1		54
51		3				1					2		1	3	2	1	1	1	2	1		3	1	2		5	1		1	5		51
48								1			2			2	1		1			1		2	1		2	5			2	2	1	48
45			1						1	1			2					1	1	2			2	2	3	7		3	5	3		45
42		1				1			1					3				2		2	1				4	1		1	8		2	42
39				1								1		1		1	1			1		1		1	3	6	2		2	1	1	39
36										1	1			1										1	1	4			3		1	36
33																				1			1		1	5	1		1	1	1	33
30												1			1			1								1	2		1		1	30
27															1									1	3				1			27
24																					1			1					1			24
21								1							1										2				3			21
18										1									1										1			18
15																													1	1		15
12																						1										12
9																																9
6																																6
3																																3
0-2																																0-2
Total	17	93	16	10	30	18	10	10	41	56	50	13	25	66	36	36	54	31	36	27	14	26	19	35	53	131	26	14	76	26	13	Total
Q3	99.8	99.8	105.0	97.5	98.3	100.5	93.8	94.5	92.6	91.5	92.5	92.6	93.8	90.4	87.8	90.0	87.6	84.8	84.0	75.9	73.5	88.5	87.8	79.9	79.7	81.1	80.5	82.5	70.0	65.5	62.3	Q3
Md	92.3	89.5	88.5	88.5	88.5	88.2	85.5	82.5	81.4	81.0	80.0	79.5	78.8	78.4	78.0	78.0	77.1	73.5	71.4	69.9	69.8	69.0	68.5	67.3	66.8	65.8	65.3	63.0	59.3	54.0	49.5	Md
Q1	75.8	73.7	75.0	80.3	80.3	73.5	81.5	64.5	70.4	67.0	66.4	69.8	66.2	63.4	63.0	67.5	66.4	59.6	61.5	55.1	59.3	53.5	53.5	56.3	44.4	53.3	55.5	47.5	43.9	48.8	39.8	Q1
Range	59-105	42-115	47-111	40-107	60-107	43-111	63-99	23-104	44-116	19-113	38-107	31-106	45-109	38-109	22-105	41-107	40-115	31-103	16-106	34-96	24-91	9-107	34-102	26-101	22-107	32-105	31-99	43-104	17-95	17-101	32-94	Range

*May not be representative of true achievement due to unfavorable examination conditions.

TABLE IX

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL II, FORM A, BY GRADUATING SENIORS IN TWENTY-FIVE COLLEGES



	1	2	3	4	13	49	6	43	50	41	40	27	51	34	12	42	16	22	29	28	23	33	44	20	52
Total	24	11	13	33	45	17	58	10	67	26	11	30	20	13	24	60	15	49	14	19	16	18	30	38	12
Q3	130.5	124.3	119.8	129.6	122.3	128.3	117.4	121.5	120.1	110.3	105.8	104.3	109.5	104.3	105.0	103.5	99.8	101.6	103.5	105.8	96.0	88.5	70.5	80.3	42.0
Md	122.0	120.8	116.3	114.8	111.5	108.8	106.0	103.5	100.5	96.0	95.3	91.0	90.0	88.5	87.0	84.0	82.5	81.8	79.5	79.5	73.5	70.5	57.0	55.5	37.5
Q1	103.5	109.1	108.8	96.4	90.4	75.4	88.5	94.5	77.1	71.3	83.3	69.8	73.5	84.3	57.0	59.0	59.3	72.2	51.8	47.3	55.5	54.8	34.5	40.5	24.0
Range	62-140	98-129	82-127	48-145	55-135	25-134	39-142	58-136	44-131	42-139	50-128	30-144	50-123	40-117	24-134	25-140	29-130	30-134	12-125	24-129	30-132	34-118	10-141	7-115	21-69