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EDUCATIONAL RESEARCH

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II

CONTENTS.

	Page.
Introduction.....	1
Conferences.....	1
National educational organizations.....	1
Foundations.....	2
Research bureaus.....	3
Experimental schools.....	6
Periodicals dealing with educational research.....	6
Costs and finances.....	8
Buildings, grounds, and equipment.....	9
School attendance and enrollment.....	10
Retardation and elimination.....	11
Organization and administration.....	11
Teaching and supervisory staff.....	15
Methods of teaching and learning.....	18
Methods of study.....	21
The curriculum.....	22
Health.....	44
Vocational guidance.....	46
Selected surveys.....	47
Bibliography.....	52

EDUCATIONAL RESEARCH.

I. INTRODUCTION.

The past two years have witnessed a substantial growth in the number of scientific studies in education from the empirical and experimental points of view. The scientific method which for the past decade has been most prominently associated with investigations in educational psychology is also being applied with increasing success to costs and finance, buildings, grounds and equipment, organization and administration, the curriculum, and surveys in special fields of education. This biennial review aims to present in brief form the principal contributions in the main fields of education, excluding "mental tests." An effort has been made to show the influence of research organizations, research bureaus, foundations, laboratory schools, and educational periodicals for the years 1921 and 1922.

II. CONFERENCES.

Among the most stimulating organizations for fostering the scientific approach to contemporary educational problems and procedure may be mentioned the recent tendency for universities and teacher-training colleges to devote a week to educational conferences. Annual reports for the past two years are now available from the San Jose Teachers' College, Calif.; Ohio State Educational Conference at the State University; Annual Schoolmen's Week at the University of Pennsylvania and the University of Minnesota; Florida High School Principals' Conference at the University of Florida Teachers' College.

III. NATIONAL EDUCATIONAL ORGANIZATIONS.

A large number of educational organizations, national and local, are now actively engaged in studying various phases of educational problems and policies. Among the organizations that have emphasized the research aspects of education may be mentioned the American Council of Education, Washington, D. C., which studies the larger questions of educational policy.

The Educational Research Association is organized to encourage the establishment of bureaus of educational research and to promote the improvement of school efficiency. The membership to this organization is attested by the qualifications for educational research. The association aims to unify the activities of workers throughout the country, to correlate the efforts of those who are originating, organizing, and directing educational investigations and experiments.

The National Society for the Study of Education has for many years promoted investigations and discussions on educational questions. The National Society of College Teachers of Education holds annual meetings and issues reports and monographs on problems dealing with the professional phases of education. The section of the American Association for the Advancement of Science has extensive programs in scientific experimental education annually.

To the above association should be added the Phi Delta Kappa, a professional educational fraternity having a membership of 4,500 in 26 of the leading universities of the country. This fraternity supports "the highest educational ideals and encourages an unswerving allegiance to the principles underlying public education." A similar society for women, Pi Lambda Theta, now has 15 active chapters in this country.

Among the other associations which issue yearbooks are the National Association of Secondary School Principals and the National Education Association.

IV. FOUNDATIONS.

During the past two years there has been an increased tendency for foundations to furnish funds for research work in education. Some of these foundations have for several years been contributing directly or indirectly toward the advancement of education.

The Carnegie Corporation of New York has made substantial appropriations to the American Council on Education for investigations in the financing of public education in the United States. The Carnegie Foundation for the Advancement of Teaching has endowed a division of inquiry. Substantial funds have also been given to the regents of the University of the State of New York and the Teachers College, Columbia University, for research on the laws governing education in the State of New York, the preparation of teachers, and the study of units of intellect and capacity.

The Carnegie Foundation for the Advancement of Teaching has organized from time to time the study of various special educational problems in relation to the retiring allowances and its effect on the advancement of teaching.

The Commonwealth fund has made a large number of contributions to various educational research workers in various parts of the country. The main contributions center around (a) Educational finance; (b) curriculum studies, with special reference to teaching methods, learning processes, and materials of instruction; (c) re-organization of the educational system, with special reference to units of administration; (d) individual differences among pupils.

The general education board originally was founded in 1902 for the promotion of education in the South, but its work is much more extensive now. It has contributed to the endowment of colleges, toward medical institutions, and increase of teachers' salaries; made studies in finance; and conducted surveys of education and farm demonstration work.

The Jeanes fund, for the improvement of negro rural schools, cooperated during the session ending June 30, 1922, with public-school superintendents in 273 counties in 13 States. The 275 supervising teachers, paid partly by the counties and partly through the Jeanes fund, visited regularly in these counties 7,850 country schools.

The John F. Slater fund now aids 156 county training schools.

The Rockefeller Foundation contributes to research in medicine and hygiene and only indirectly to educational research, but it does contribute to medical education, rural health demonstrations, and other agencies for public health.

The Laura Spellman Rockefeller Memorial is also contributing funds for research work in certain phases of educational work. For many years the Russell Sage Foundation has maintained a division for educational research.

V. RESEARCH BUREAUS.

A recent tendency in the scientific movements of education has become apparent through the establishment of a large number of educational research bureaus throughout the United States. These bureaus are not only clearing houses for educational literature, intelligence tests, and achievement scales in subject matter and supervision, but also active laboratories for educational experiments and demonstrations. The movement is developing so rapidly that a complete list is difficult to secure. The 80 centers listed below will furnish a tangible index of the present status of this development in the empirical approach to the science of education.

1. CITY EDUCATIONAL RESEARCH BUREAU.¹

Aberdeen, S. Dak. M. P. Staker, director, bureau of educational measurements.
Akron, Ohio. A. O. Heck, director, bureau of educational research, public schools.

¹ In the preparation of this list material assistance has been rendered by John K. Norton, director of research of the National Education Association.

- Ardmore, Okla. H. D. Rinsland, director, bureau of research, city schools.
- Atlanta, Ga. H. H. Bixler, director of educational research, board of education.
- Baltimore, Md. J. L. Stenquist, director of educational research, public schools.
- Beaumont, Tex. Clara Mallory, director, educational research, 1016 Liberty Street.
- Berkeley, Calif. Virgil E. Dickson, director, bureau of research and guidance.
- Birmingham, Ala. W. E. Putman, director of research department, board of education, Administration Building, 2030 Park Avenue N.
- Boston, Mass. Arthur Kallene, assistant director, bureau of research, Huntington Avenue.
- Chicago, Ill. A. B. Wright, director of statistics and reference.
- Cincinnati, Ohio.
- Cleveland, Ohio. C. H. Mann, acting director of reference and research.
- Cuyahoga County, Ohio. Full-time assistant superintendent in charge of educational research.
- Denver, Colo. Emma M. Brown, director, bureau of research, public schools; George W. Frazier, bureau of educational research, public schools.
- Detroit, Mich. P. T. Rankin, bureau of educational research.
- Duluth, Minn. Ray Latham, assistant superintendent, department of elementary education.
- Des Moines, Iowa.
- Emporia, Kans. D. A. Worcester, director, bureau of educational measurements, Kansas State Normal.
- Fresno, Calif. Miss Mary B. Cummings, director of department of research.
- Grand Rapids, Mich. C. D. Dawson, assistant superintendent of schools.
- Hibbing, Minn. J. W. Richardson, director, educational research.
- Highland Park, Mich. H. C. Daley, director, survey department.
- Honolulu, Hawaii. Katherine Murdock, director of research, Hinshanoll School.
- Indianapolis, Ind. Murray A. Dalman, director of research, reference and statistics.
- Jackson, Mich. Helen Davis, director, educational and mental measurements.
- Kansas City, Mo. George Melcher, director, bureau of educational research, Library Building.
- Lewiston, Idaho. C. L. Harlan, department of educational measurements, Lewiston State Normal.
- Little Rock, Ark. Department of educational measurements. G. T. Huckaly, supervisor.
- Long Beach, Calif. E. P. Branson, director, bureau of educational research, city public schools.
- Los Angeles, Calif. A. H. Sutherland, director, department of psychology and educational research.
- Louisville, Ky. B. W. Hartley, director, bureau of educational measurements.
- Martins Ferry, Ohio. Mrs. Margaret Brainerd, director of educational research.
- Minneapolis, Minn. Dr. J. Brueckner, Bureau of Educational Research.
- New York City. Eugene Nifenécker, director of reference, research, and statistics.
- Newark, N. J. E. D. Sexton, assistant superintendent, department of reference and research.
- New Orleans, La.

Oakland, Calif. Virgil E. Dickson, director, bureau of research and guidance.
 Omaha, Nebr., L. O. Smith, assistant superintendent in charge of research.
 Pasadena, Calif. W. H. Hughes, director of research.
 Pittsburgh, Pa. J. F. Guy, director of research and measurement, 720 Fulton Building.
 Rochester, N. Y. J. P. O'Herr, assistant superintendent in charge of research.
 Santa Ana, Calif. Mary B. Henry, director, research and guidance.
 St. Louis, Mo. F. L. Wiley, director of tests and measurements.
 St. Paul, Minn. L. L. Everly, director of research.
 Seattle, Wash. Fred C. Ayer, director, department of research.
 Trenton, N. J. J. M. McCallie, bureau of educational research and efficiency.
 Virginia, Minn. W. A. Justice, director of research.
 West Allis, Wis. T. L. Torgenson, director, educational research, city schools.
 Youngstown, Ohio. Henrietta V. Race, director, bureau of educational and mental measurements, board of education.

2. STATE AND UNIVERSITY BUREAUS FOR EDUCATIONAL RESEARCH.

California. Whittier State School. J. Harold Williams, director bureau of juvenile research.
 California. State Teachers' College, San Jose. Bureau of research and extension.
 California, University of. Bureau of research in education. Virgil Dickson, Berkeley and Oakland, Calif.
 Carnegie Institute of Technology. Department of educational research. E. K. Strong, jr., director.
 Colorado State Normal School, Gunnison, Colo. H. T. Manuel, director of educational research.
 Columbia University. E. L. Thorndike, director of institute of educational research.
 Idaho. Lewiston State Normal. Bureau of educational measurements. C. L. Harlap, director.
 Illinois, University of. Bureau of educational research. W. S. Monroe, director.
 Indiana, University of. Bureau of cooperative research. H. L. Smith, director.
 Iowa Child Welfare Research Station. State University of Iowa. B. T. Baldwin, director.
 Kansas State Normal, Emporia. Bureau of educational measurements. D. A. Worcester, director.
 Kansas, University of. Bureau of administrative research. F. J. Kelly, director.
 Michigan, University of. Bureau of education, reference, and research. Director, Clifford Woody.
 Minnesota, University of. State board of education research bureau, St. Paul, Minn. Frederik Kuhlmann, director.
 Nebraska, University of. Teachers' College, bureau of educational measurements. Charles Fordyce, director.
 New York, State University. J. Cayce Morrison, specialist in educational measurements.
 North Dakota, University of. Bureau of educational measurements. F. M. Garver, director.
 Ohio State University. Bureau of educational research. B. R. Buckingham, director.
 Oregon, University of. Bureau of educational research. C. A. Gregory, director.

Pennsylvania. State Normal School, Bloomsburg. Bureau of educational research. J. P. Hering, director.

Pennsylvania. Institute for the Instruction of the Blind, Overbrook. Department of research, Samuel P. Hayes, director.

Pennsylvania, University of. Lefoy A. King. Bureau of educational measurements.

South Dakota. Northern normal and industrial schools, Aberdeen. Bureau of educational research.

Virginia, University of.

Wisconsin. State Department of Public Instruction, Madison, Wis. Dr. W. J. Oslum, director of educational measurements.

VI. EXPERIMENTAL SCHOOLS.

Another approach to research in education is through the laboratory and experimental schools affiliated with colleges and universities. These are becoming an integral part of the best schools of education and represent the logical outcome of the earlier demonstration and practice schools which are also of significant value in developing a science of education.

College and university laboratory schools are now organized at Bryn Mawr, University of California, University of Chicago, Columbia University, Drake University, George Peabody College for Teachers, University of Illinois, Indiana University, State University of Iowa, Louisiana State College, Miami University, University of Minnesota, University of Missouri, University of Nebraska, New York State College for Teachers, University of Oklahoma, University of Oregon, University of Pittsburgh, Smith College, University of Wisconsin, University of Wyoming, and Winthrop College.

Among the experimental schools that are aiding in advancing education in the empirical field are the so-called schools for progressive education, such as the Francis W. Parker School, in Chicago; the Bureau of Educational Measurements, in New York; the Child Education Foundation and Children's University School, in New York; the Fairhope Organic School, in Alabama; the Park School, in Baltimore; the Shady Hill School, in Massachusetts; the Play School, in Berkeley, Calif.; and approximately 40 others with a similar point of view.

A longer list of progressive public schools in various sections of the country could easily be cited whose experimentation is extensively carried out in all phases of school administration and instruction.

VII. PERIODICALS DEALING WITH EDUCATIONAL RESEARCH.

No factor has contributed more to the dissemination of the scientific point of view in education than the splendid cooperation of journals in this and allied fields. A large number of these maga-

zines and monographs provide for the publication of experimental and statistical studies, with ample facilities for the inclusion of charts, tables, and diagrams. The principal periodicals contributing directly to the research phases of education are:

- American School Board Journal*. Monthly. The Bruce Publishing Co., 354-364 Milwaukee Street, Milwaukee Wis. Edited by William G. Bruce.
- Educational Administration and Supervision, including Teacher Training*. Monthly. Warwick & York, Baltimore, Md. Edited by W. C. Bagley, W. W. Charters, L. D. Coffman, A. Inglis, D. Snedden, G. D. Strayer.
- Educational Review*. Monthly. Doubleday, Page & Co., Garden City, N. Y. Edited by Frank P. Graves.
- Elementary School Journal*. Monthly, September to June. University of Chicago Press, 5822 Ellis Avenue, Chicago, Ill. Edited by the faculty of the School of Education of the University of Chicago.
- Journal of Applied Psychology*. Quarterly. Indiana University Press, Bloomington, Ind. Edited by James P. Porter and William F. Book.
- Journal of Educational Psychology*. Monthly, except June, July, and August. Baltimore, Warwick & York. Managing editor, Harold O. Rugg.
- Journal of Educational Research*. Monthly, except July and August. Official organ of the Educational Research Association. Public School Publishing Co., Bloomington, Ill. Edited by B. R. Buckingham.
- Journal of Experimental Psychology*. Bimonthly. Princeton, N. J., Psychological Review Co. Edited by John B. Watson.
- Mental Hygiene*. Quarterly. Published by the National Committee for Mental Hygiene, 27 Columbia Street, Albany, N. Y. Edited by Frankwood E. Williams.
- Pedagogical Seminar*. Quarterly. Worcester, Mass. Edited by G. Stanley Hall.
- Psychological Bulletin*. Monthly. Princeton, N. J., Psychological Review Co. Edited by Shepherd I. Franz.
- Psychological Index*. Annual. Princeton, N. J., Psychological Review Co. Edited by Madison Bentley.
- Research Bulletin of the National Education Association*. Published in January, March, May, September, and November by the research division of the N. E. A., 1201 Sixteenth Street NW., Washington, D. C.
- Science*. Weekly. The Science Press, 11 Liberty Street, Utica, N. Y. Edited by J. McKeen Cattell.
- School and Society*. Weekly. The Science Press, 11 Liberty Street, Utica, N. Y. Edited by J. McKeen Cattell.
- School Review*. Monthly, except July and August. University of Chicago Press, 5822 Ellis Avenue, Chicago, Ill. Edited by the faculty of the School of Education, University of Chicago.
- School Science and Mathematics*. Monthly. East Seventy-second Place, Chicago, Ill. Edited by Charles H. Smith.
- Teachers College Record*. Every two months, except July. Bureau of Publications, Teachers College, Columbia University, New York City. Edited by J. E. Russell.

Among the most significant monograph series may be mentioned the following:

Archives of Psychology, from Columbia University, frequently deals with the psychology of the learning process.

Educational monographs, issued by the Society of College Teachers of Education, present studies for discussion at annual meetings of the society.

Educational Psychology monographs, published by Warwick & York, Baltimore, report extensive studies in the field of educational psychology in book form.

Journal of Educational Research monographs, printed by the Public-School Publishing Co., of Bloomington, Ill., include longer studies of the same type appearing in the journal.

The National Society for the Study of Education Yearbooks, also printed by the Public-School Publishing Co., are discussed at the annual meetings of the society. Many of the yearbooks are the result of cooperative work by committees of the society.

Psychological monographs, issued by the Psychological Review Co., Princeton, N. J., appear as separate studies of particular psycho-educational problems.

Supplementary education monographs, edited by the faculty of the School of Education of the University of Chicago, present a body of scientific and practical material on reading, arithmetic, penmanship, algebra, home economics, kindergarten-primary education, the curriculum, the student population of American secondary schools, and the administrative organization of elementary schools and high schools.

Teachers College Contributions to Education are published by the board of publications of Teachers College, Columbia University, and present serial studies in the history and philosophy of education, educational psychology, kindergarten, elementary and secondary education, educational administration, and related fields.

United States Department of Interior Bulletins are issued by the Bureau of Education, Washington, D. C., and include surveys, reports, and the results of investigations.

In addition to the above, education monographs are also issued from time to time by the Universities of California, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Ohio, and Pennsylvania.

VIII. COSTS AND FINANCES.²

Studies in public-school finance have been made for the States of Colorado, Iowa, Minnesota, and Wyoming by Swift (15), Russell (12), Swift and del Plains (16), and Slade (13); Holy (6) and Lindsay (8) (9) have contributed to the Iowa survey. Other surveys in press are: For California, by Cubberley; New York, by Strayer; and Illinois, by Morrison. Swift has made a comparative study of State policies in public-school finance. The National Com-

²The numbers in parentheses in the text refer to items in the bibliography, pp. 52-77.

mittee of the Chamber of Commerce, Cooperation with the Public Schools (10), has published a report on its inquiry Number III, relating to boards of education and the receipts and expenditures of urban public schools. Frasier (4) has studied the data for 169 cities in order to determine the factors of efficiency, and concludes that the city with an elected board and with financial independence has a better chance for an efficient school system.

Carter and Thiesen (3) report on the advisability of publicity campaigns for school support. Burgess (2) has published a book on the Trends of School Cost, and the National Education Association (11) has published a bulletin of Facts on the cost of public education, dealing with the increasing cost, salaries, and professional status of teachers.

Johnson (7) has studied the teacher's load and cost of each item through a questionnaire.

In university and college finance there is a Bureau of Education (5) bulletin on the expenses of women college students; a study by Stevens (14) on cost per student hour of different subjects and departments in the University of Washington. But the most extensive study in college and university finance is by Arnett (1) and includes a study of receipts, disbursements, endowments, plant, accounting, reports, and organization.

Swift (17) has written a monograph presenting the most significant conclusions in an extensive study of school finance in a number of States continued over a period of several years.

IX. BUILDINGS, GROUNDS, AND EQUIPMENT.

Bulletins dealing with buildings and grounds and allied topics, published by the Bureau of Education, are on high-school buildings and grounds (2), school grounds and play (4), the housing and equipment of kindergartens (1), public-school dormitories (9), and teachers' homes (12). There is also a study of the functions and administration of school janitors (6).

Textbook selection.—Two books have been published dealing with the selection of textbooks. One of these by Maxwell (10) gives score cards; a general one to use in judging all texts and specific cards for different subjects, but few of the objective criteria have been scientifically determined. The other study is by Franzen and Knight (5) and consists of two parts—judging high-school texts in literature by the criterion of interest, and geographies by the criterion of comprehension by means of reading tests constructed from the text of five series. Horn (8) suggests that book companies develop silent reading manuals, the outstanding characteristics of which should be

these: (1) They should be rich in factual and informational data; (2) the content of the selections should be worth while; (3) most of the selections should be of sufficient length; (4) some selections should contain data given in great detail; (5) some selections should be preceded by guiding problems; (6) each selection should be followed by appropriate comprehension tests and tests to measure organizing ability; (7) the book should contain an excellent index and table of contents; (8) the mechanical make-up of the book should be good.

Libraries.—On libraries, we have a comparison of public library facilities of different States by Miller (11); of university libraries in 1915 and 1921 by Reeder (13); a study of high-school library book selection from the viewpoint of a science teacher by Glenn (7); and a study of standardization of library work and equipment for history by a committee of the Mississippi Valley Historical Association (3).

X. SCHOOL ATTENDANCE AND ENROLLMENT.

Ensign (6) has made a study of the development of legislation for compulsory education in relation to child labor. Another study, in *The American Child* (9), deals with the effect on child labor in agriculture of compulsory attendance laws. Bonner (1) (2) (3) has studied the effectiveness of the compulsory attendance laws of each State.

Walters (10) (11) (12) has given annual reports of enrollment statistics in several colleges and universities. There are also Bureau of Education bulletins on the subject. Koos (7) (8) has studied the residential distribution of college students from the point of view of desirable locations for junior colleges. Byrne (4) has studied high-school enrollments and determined the ratio to population in 43 large cities. West and Koos (13) have tried to estimate the size of freshman classes in 1940 from high-school enrollment. Counts (5) has studied the parental occupation of high-school pupils in four cities in relation to progress through school, curriculum elected, and plans for after graduation.

Town (9a) has made an analytic study of a group of 5 and 6 year old children in order to determine what kind of children the Iowa homes are sending to the Iowa schools. Each child was given a physical, anthropometric, speech, and mental examination. One important conclusion reached is that the basis of physical defects and character defects is already fixed when the child first enters school.

XI. RETARDATION AND ELIMINATION.

Most of the studies in this line are in connection with intelligence tests. There are a number of studies on the value of intelligence tests in prognosis and the relation between failures and mental tests which do not fall within the scope of this bulletin. Kelly and Loomis (5) have made a study of the extent of retardation in one-room rural schools in Kansas and compared it with the retardation in town schools and found it greater. Gwinn (4) has found that changing from school to school affects the child's progress. McCormick (7), in a study of high-school failures in La Crosse, found important factors to be the attitude and study habits of the pupil; cooperation between student, parent, and teacher; personality; professional preparation and attitude of teacher; also intelligence of pupils.

Smith (10), in a study of high-school failures, found the percentage of failure, increased from year to year; was greatest in the modern language curricula and in English and mathematics; the tendency to fail varied directly as age of pupil on entrance and inversely with the amount of home study. A study by Rogers (9) of retardation of both grades and high school in Baltimore showed irregular attendance and late entrance or early learning to be the causes in 26½ per cent of cases; physical defects or illness in 9 per cent; indifference in 21½ per cent and low ability in 42½ per cent. Forty-two per cent of the failures were in English and 41 per cent in mathematics. Buckingham (1) reports a successful experiment in promoting failing pupils on probation.

The chief cause of elimination of pupils in Phoenixville, Pa., was found by Doughton (2) to be desire or necessity to work. Eaton (3) studied the scholarship of pupils leaving school and found an average of 2.04 failures per pupil for the group leaving as against 0.8 for the entire school. Leaming (6) found from a study of 908 children applying for working certificates that most of them left because of dissatisfaction with school and were not from the successful group in school.

Nifenecker (80) has made a study of retardation in New York City and pleads for greater flexibility in grading, in course of study, in methods of advancing pupils, and for a more "purposive program."

XII. ORGANIZATION AND ADMINISTRATION.

The junior high-school movement is the outstanding feature in school organization, particularly in the Middle West and West, and many studies have been made as to its extent. Among these are reports by J. H. and J. C. Clement (15) (a-b), Philips (61), Pratt

(66), and Smith (74), as to the status of organization and administration of junior high schools in large cities. Rodgers (72) has studied particularly the curricula and programs of 101 schools. Lyman (50) (51) (52) and Gould (33) have described the organization, curricula, buildings, methods, and activities of certain typical junior high schools. Spain, Moehlman, and Harrington (77) have prepared a bulletin dealing with similar topics in great detail on the Detroit intermediate schools. Koos (46), through a canvass of educational literature and the securing of ratings by 124 judges, has arrived at a ranking of the relative importance of the peculiar functions of junior high schools.

One study compares the effectiveness of the junior high school with that of the old 8-4 plan. This is by Briggs (9) in Los Angeles to determine to what extent junior high school pupils persist in school and to what extent secondary education electives are economically offered in the "intermediate" school. He found a higher per cent of high-school graduates had come from "intermediate" than from "elementary" schools and that the "intermediate-school" graduates bring on an average 10.2 credits to high schools, are more stimulated to earn credit in summer school, and that 82 per cent of them continue the electives begun in intermediate school. Briggs (9) has also made a study on extra-curricular activities in junior high schools and published a text on the junior high school (10).

Another type of school of increasing importance is the junior college. Besides a study of distribution of enrollment, L. V. Koos (45) has made a comparative study of the curricula of 58 public and private junior colleges.

The rural school is another type of organization being studied. F. H. Koos (44) has compared it with larger organizations as to cost, expenditures, education, salary, and tenure of teachers. Brown (11) has made an intensive study of the school in a Michigan village from the point of view of showing the inequality of educational opportunity.

Chapman and Eby (14) and Frost (30) have made comparative studies by educational measurements of the achievement of children in country and city schools. The evidence in both studies is strongly in favor of the larger school systems.

Rapeer (67) has published a text on the consolidated rural school, most of the material of which is based on reports, investigations and observations of actual conditions, and deals with the topics of history, administration, organization, curriculum, methods, and rural life needs.

The platoon school, individual system, and Dalton plan are three types of organization being tried out. Spain (76) and Bankes (2) describe the former type as being developed in Detroit and Akron.

Washburne (87) describes the individual system as carried on in Winnetka and gives the result of a questionnaire sent the teachers, all of whom approved the system as a whole and reported children saved from failure by the method. Dewey (19) and Parkhurst (60) both have described the Dalton plan in operation.

The extent of provision and type of work provided for mental defectives has been studied by Anderson (1). Voorhees (85) has investigated the growth in knowledge of academic subjects and made a follow-up study of pupils in a prevocational room for the backward. Poole (63) (64) and Richards (71) report on diagnostic teaching of a few cases of backward and difficult children. Wallin (86) has made a study of the achievement of subnormal children, and Reamer (70) of the deaf in educational tests.

The provision made for exceptional children in the schools has been studied by Gesell (31). J. L. Horn (38) has studied the reasons for leaving school of an eighth grade class in Oakland and urges that funds should be available to support highly endowed children of poor parents so that they may continue in school. Studies have also been made by Omans (58), Freeman (29), Hughes (39), and Dvorak (23).

The Nineteenth Yearbook of the National Society for the Study of Education (35) is given up to classroom problems in the education of gifted children. Mr. and Mrs. Omans (59) describe an experiment in a special class for gifted children at Ypsilanti.

The value of a grouping of children by abilities and consequent changes in school procedure is reported on by Cox (17), Henderson (34), King (43), Mahony (53), Spain (76), Rapp (68), Kuntz (47), Odell (57), Carback (13), Hines (36), Cole (16), Berry (4), Glass (32), Stetson (79), Branson (6), Wilkerson (26), Dickson (22), Dawson (20), (21), Fordyce (27), Terman (81), Pintner and Marshall (62), Callihan (12), Stockton, Davis, and Cronin (80), Kent (42), Lowell (49), Neff (25), Breed and Breslich (7), and Thiesen (82).

The relation of size of class to school efficiency has been studied by the Illinois Bureau of Educational Research (84). Very little difference was found between the work of large and small classes in either elementary or high school. Monroe (56) also found very little relation between sectioning a class and the effectiveness of instruction. Porter (65) reports on the effects of segregation by sex on scholarship in a Detroit high school. He found the boys' marks showed 8 per cent improvement and the girls were lowered 18 per cent when separated. These marks showed closer correlation with intelligence test than did their marks before separation.

Time distribution in Louisiana schools (24) has been studied by the Callender laboratory of Newcomb College in order to obtain a basis for a study of the most effective time distribution.

Stark (78) has developed principles of school management through the study of concrete school situations. In his text he presents 241 practical problems with an account of the process of their solution in which teachers, principals, superintendents, and parents take part.

Jackson (41) and Satchell (73) have made studies of the extent of pupil government or participation in school administration in high schools. Thornton (83) has studied the extent of the women's forum, or its substitutes with types of work and details of organization in normal schools, colleges, and universities.

The present system of marking has been much criticized. Franzen (28) suggests the use of the accomplishment quotient in school marks. Hopkins (37) has studied the marks given by the college entrance examination board of Harvard from 1902 to 1920, and found the distribution diverged widely from the normal curve. He criticizes the methods used by examiners. Beatley (3) has compared the standing of students in secondary school and entrance examinations with later marks and finds a combination of comprehensive examinations and secondary-school record the most effective.

Cunningham (18) has studied the sex element in college grades from both men and women instructors. Westfall (88) has found correlations between grades in different subjects in simultaneous and consecutive courses and those with one, two, and three semesters intervening. He found the correlations decreased as time between taking courses increased. Rathbun (69) describes a system used in the University of Washington for weighting grades so as to equalize the difficulty of securing high grades in different departments.

In elementary schools there are several systems of marking being worked out. One of these being tried is the accomplishment quotient. Marot (54) describes an elaborate system of school records which will provide information for marking changes, concrete illustrations, and show achievement and progress made. Kyle (48) describes a marking system which resulted in a close approach to the normal curve. Beverly (5) discusses the use of the Trabue scale by children in rating their own work. Hughes (40), 1920, describes a combination system of supervised study, varying scope of work, and weighted credit.

Two studies of types of examinations are reported—one by the staff of instructors in contemporary civilization in Columbia, with the assistance of Thorndike (89); the other by Monroe (56). Both conclude that the "new" examinations with questions permitting

only one correct answer is preferable, though Monroe calls attention to certain limitations.

XIII. TEACHING AND SUPERVISORY STAFF.

The most frequent type of study in this field is that of surveys of the preparation or status of teachers. Such investigations as to status have been made of all teachers in 359 cities by the National Committee for Chamber of Commerce (60), of junior high school teachers in 99 schools (58), (57), and of Texas high-school teachers (62); of the preparation of high-school teachers in the accredited schools of the North Central Association (15), and another in Oregon (59) and Pennsylvania (50); of rural school teachers in Pennsylvania (35); and of all teachers in Missouri (39). Other surveys deal with the status of the visiting teacher (49) and the causes for which children are referred to her and methods employed. Burgess (9) (10) has studied the rate of progress in teacher preparation by comparison in 14 States of 1910 and 1920 statistics; Minick (43), the amount of practical work and practice teaching done by high-school teachers in Pennsylvania and New Jersey; Benson (4), 10,000 teacher-training graduates. The study indicates the relative length of the tenure of trained and untrained teachers, types of curricula in demand, distribution of trained teachers among different types of schools, and occupations of graduates who did not teach.

The most extensive study of the curricula used in teacher training is that published by the Carnegie Foundation (39) dealing with the educational and administrative aspects of the preparation of teachers in State normal schools. It includes also topics on the origin and growth of normal schools in the United States, particularly in Missouri; the government and organization of normal schools; the curricula and personnel of Missouri normal schools, their operation, administration, and product. Foster (23) has studied the status of Smith-Hughes practice teaching by means of a questionnaire. Coffman (12) has made a study of teacher-training departments in Minnesota high schools. Williams (64) (65) has made a similar study of demonstration teaching and observation in 295 institutions. Burnham (11) has made a survey of the teaching of mental hygiene, and a survey of the status of educational sociology has been made by Lantis (38). Gray (27), Schulte (55), and Douglas (21) have all studied the distribution of time or assignment of student teachers, and Brueckner (8) describes an experiment in their training by means of field work. Ross (52) reports on the status of county teachers' institutes in Pennsylvania.

Anderson (2) by means of a questionnaire has arrived at three basic courses in education, which he describes. One he calls intro-

ductory and informational, one theoretical and general, and the third a course in schoolroom procedure.

Franzen (24) has made a comparison between general and special methods courses in teaching high-school subjects by means of analyses of outlines, notebooks on syllabi, and descriptions of both types of courses. He has listed the topics treated in order of frequency in different types of courses, and as a result of the study suggests standards for the two types of courses.

The Bureau of Education has published bulletins by Koos (37) on standards in graduate work in education, by Cook (13) on the laws and regulations on the certification of teachers in different States, by Gleim (26) on the visiting teacher, one by Dawson (17) on the preparation of teachers of the social studies, and another by Cook (14) on the provisions for, and methods and results of, the supervision of rural schools in different States.

Charles Russell (54) presents a thesis on the improvement of the city elementary-school teacher while in service. It includes a survey of the historical background, a study of school reports to determine what are the present agencies in use for teacher improvement, the fundamentals of improvement, and an outline of the steps through which a teacher must pass in becoming the mature master.

Waples (63) gives a table of the relative value of college education courses obtained by gathering the opinion of high-school principals. Lowery (40) reports a study of the attitude of college students toward teaching.

Greenan (28) has studied the distribution of time of East Orange high-school teachers for teaching, clerical, advisory, and disciplinary work.

Douglas (21) has made a study of the market for prospective high-school teachers. A similar study would be of value to colleges of education.

Morton (46) reports a study in grading examinations from which he concludes that this method of licensing teachers is too inaccurate.

Studies as to the characteristics desirable for a teacher are reported by Osburn (48) and Smith (56), who deal especially with industrial teachers; and by Hanly (29) and Dolch (20), who take it up from the child's viewpoint. The outstanding contribution in this field is Knight's (36). He had 153 teachers rated by the mutual ratings of supervisors and pupils and against these ratings correlated objective facts. Correlations with age, experience, and quality of hand writing were too low for prognostic purposes, but ability to pass a professional test, normal-school scholarship, and in the case of the high-school teacher, intelligence seemed significant.

C. O. Davis (16), by means of a questionnaire, has arrived at the following duties of a high-school principal:

1. To formulate a vision and a policy for the school * * * and to communicate this vision to his entire staff.
2. To lead in the formulation of ways and means for realizing their vision and policy.
3. To supervise instruction, inspire teachers and pupils, coordinate and articulate efforts.
4. To serve as the school's agent before the public.
5. To share confidences with his teachers and pupils; * * * delegate to them * * * responsibilities; * * * and unify the work of the entire school.

Hudelson (31) has studied the actual distribution of time between different duties by principals in West Virginia. He concludes that they need clerical assistance. McClure (41) reports a study of requisites for appointment and duties of principals in 17 to 20 large cities. He found much discrepancy between theory and practice, too much time given clerical work, too little time to supervision.

Morrison (44) has made a study of supervision from the teacher's viewpoint, from which he concludes that the principal could help most by suggestions, inspiration, cooperation, help in discipline, and the discussion of problems of instruction in teachers' meetings; the assistant superintendent by demonstration teaching, organizing teachers' meetings, giving teachers self-confidence; the supervisor in suggestions, outlines, and personal conferences; the department heads in helping to prepare outlines and lessons, grouping children by ability, and in improving technique of teaching.

Gist and King (25) made a study of the principal only from the same viewpoint. The most mentioned ways in which he could help were in the care of the exceptional child, with the course of study, as a professional leader, in prompt delivery of supplies and equipment, and by a well-defined system of management.

Morrison (45) has made a study of the legal status of the city-school superintendent, using as sources statutes, historical writings, general principles of government, and judgments of leaders in education. The first of these sources is his main reliance. Some conditions revealed are the predominance of small boards, a four-year term of office, and the disappearing ward representation in school boards. The powers in which the superintendent is most nearly independent are enforcement of attendance, granting of working papers, making of formal reports, and supervision of instruction.

Almack (1) has studied the duties and training of city superintendents by means of a questionnaire and a study of published rules and of texts. He found the appointment of school officers and teachers, supervision, teachers' meetings, making reports, enforcing rules, attending board meetings, and the study of other school systems among the more frequently mentioned duties.

S. W. Johnson (33) reports a study by questionnaire of the relations between superintendents and school boards in Iowa, taking up such topics as causes of failure, factors in success, difficult problems for board and for superintendents, the manner of selecting the board, and closing with recommendations as a result of the study.

Struble (61) has studied school-board personnel, classifying board members as to vocations, age, sex, experience, number of their children, and miscellaneous factors, and rating board members as to their influence, valuableness, progressiveness, and leadership.

There have been several studies on salaries made, but not so many as in 1920. Some of these are by the Massachusetts Department of Education (42) of conditions in that State; Eaves (22) on old-age support of women teachers, also in Massachusetts; and the National Education Association (47) on salaries in cities of 100,000 population and over. Bonner (6) made two studies, one of high-school teachers' salaries, the other (5) dealing particularly with opportunities for advance and concluding that the salaries of experienced teachers especially should be increased. Arnett (3), in 1921, made a study of salaries of college teachers. Deffenbaugh (18) has a study of the salaries of administrative officers and their assistants in large cities. Hertzog (30) discusses State maintenance of teachers in training as a solution of teacher shortage.

The value of use of intelligence and standardized tests in supervision is shown in studies by Brooks (7), with rural schools, Dickson and Norton (19), Ruch (53), Kallom (34), Rogers and Baker (51), and Johnson (32). The last two studies consider especially their value in evaluating different methods of instruction.

XIV. METHODS OF LEARNING AND TEACHING.

In the field of general methods the project method and socialized recitation continue in the foreground. Library Leaflet, No. 17, February, 1923, of the Bureau of Education (26) gives a list of references on the project method in education which is quite complete. Parker (16) has written a series of articles on the thinking process, showing the importance of problem solving, presenting illustrative school lessons and rules for stimulating thinking, and a biographical study of how eminent men think.

Taylor (23) has compared 30 lessons taught by the socialized method with those that were teacher-directed and found the socialized classes gave better results.

A comparison of the traditional method and a freer method tried in first grade is reported by McCall, Chassell, and Hollingworth (14). The free group in first grade made less progress in seven tests and

more in three; in second grade less progress in four and more in one, but the differences were very slight.

Richardson (19) discusses what he calls the campaign method, defining a campaign as characterized by a recognized need, definite time limits, organized effort to stimulate and sustain interest, with its success resting upon others than its organizers. He reports three campaigns in the four fundamental processes which resulted in marked improvement.

Linke (13) describes an experiment in teaching in response to children's questions. A comparison of the lecture method with the question and answer method, tried in 11 high schools, is reported by Alderman (1). He found that the former method was slightly better in grades 10 to 12 and the latter better in grades 7 to 9. Pupils of superior ability did better by the lecture method, those in the fourth quartile by the other method. Two studies of presenting matter to college students by Holton (8) and Horne (9) both favored the discussion method.

Hunter (10) compared the textbook, lecture, and developmental method and found they ranked, for immediate retention, developmental first, lecture second, textbook third; for delayed retention, lecture first, developmental second, and textbook third; for power, developmental first, textbook second, and lecture third. He also compared oral developmental with laboratory manual and found the first method superior. In an experiment comparing visual and oral instruction he found the oral method preferable.

Weber (27) has studied the effectiveness of visual aids in seventh grade instruction. He found showing films method superior to an oral presentation when the subject matter was largely descriptive, but in another experiment where four methods of presentation were used—films, film-lecture, oral, and printed descriptions—the film method did not secure such superiority. Measured by ability to give information verbally, the first methods gave approximately the same results, but measured by the ability to draw, the visual method was distinctly superior.

Monroe (15) has made a study of the types of learning required in different school subjects and their relative difficulty. He found the most frequent types are:

Type I, comprehension of material read plus memorization, so that it can be reproduced; Type IV, obtaining information for the purpose of solving problems or answering questions; Type XI, drawing valid conclusions from given data or statements; Type IX, a clear comprehension of the essential conditions of a problem which is to be solved.

The types varied for different subjects. The most difficult types from the standpoint of the pupil are Types XI and I above. Type XI is also the most difficult with reference to instruction.

Robinson and Heron (20) studied the effect of variations in length on memorizing by the use of nonsense syllables, and found, with increasing length of material, a negative acceleration in the memory curves. Laird, Remmers, and Peterson (12) found that organization and classification of material is an aid to memorizing and that it is probably more beneficial, the more meaningful the material.

The value of interest in learning is shown in studies by Bridges and Dollinger (4), who found a correlation of $+0.22$ to $+0.28$ between subject's rank in interest and the grade the student received. Thorndike (24) obtained a correlation of $+0.46$ between the rank which a college student gives a subject for interest and the mark he receives in that subject in comparison to the marks he receives in other subjects. Freeland (6), in a year's study of the daily learning of six children, found interest to be one of the significant factors, others being physical condition, mental alertness, and tenacity. Waples (25) has reviewed the problem of interest in education in a five-chapter study which takes up a classification of the literature of the subject, discussion of the value, the development, the social modification, and social expression of interest.

Book and Norvell (3) studied the effect of interest in improvement on 124 college students in four simple kinds of learning and found that interest in improvement served as a directive force, and concluded that "interest in improvement and belief in its possibility aid mental adaptation and the formation of new and better methods of work" (pp. 354). Arps (2), in a comparison of work done with or without knowledge of results, arrived at a similar conclusion. Work without knowledge of results was reported as very deadening.

Peaks (17) has studied the periodic variations in efficiency, summarizing important studies of the influence of heat, weather, humidity, and time of day or year on efficiency. Some of his conclusions are that there are three periods of physical and mental growth in the school year, one of depression in January to March, and two favorable, September to December and March to June.

Sullivan (22) studied the effect of mood upon performance and found it insignificant. Garrett (7) concluded from experiments upon judgment that each individual has an optimum rate for accuracy.

General texts on learning have been published by Kirkpatrick (11), who deals particularly with the place of imagination in education; Stratton (21), whose purpose was to determine the relative importance of special mental facilities and the transfer of training; Edwards (5), whose text includes many useful suggestions with regard to methods of study; and Pyle (18), who reports many experiments in his book, *The Psychology of Learning*.

XV. METHODS OF STUDY.

Webb (8), 1920, reported on the habits of study of college students. He found superior students use good methods more than do poor students, but the majority of good methods are not used by the majority of students. They use better methods for examination. Study habits are merely picked up and students should be taught how to study. In another similar study by Webb (9), a comparison of the methods used by students of four different teachers was made in an attempt to prove that the habits of study should be considered in measuring effective teaching.

Garth (3) reports a similar study in which he found only 4 per cent of students were studying in "true problematic fashion." The median method of study used was about half way up on the scale for measuring methods of study whose preparation he describes.

Elizabeth Thorndyke (7) reports on environment as a factor in a pupil's study life. The data were obtained from 1,600 high-school pupils. Seven per cent preferred to study at home, the rest at school. The place in which they would be least interrupted was usually preferred. Other reasons for preferring to study at home were more continuity, and chance to study aloud; for preferring to study at school was the fact that everyone else was studying, and that there was an opportunity to get help.

Clayton (2) made a closely allied study in attitude toward school work and found girls and older pupils spent more time than boys, and younger pupils and the girls were more contented than the boys.

Germane (4) has studied the value of outlining and summarizing compared with rereading with both college and grade students. He found the rereading group excelled those summarizing, but when the summary was stimulated and directed by specific problems, it gave the better result, and this superiority was even greater when writing was eliminated, especially in the grades. Yoakum (11), who studied the effect of a single reading, found that only a small proportion of material read was retained and that repeated testing was an efficient method of securing retention.

Studies in memorizing still continue. Woody (10) found oral reading superior to silent reading in the memorization of poems for the majority of individuals studied. Robinson (5) found that the relative merits of distributed and concentrated study of numerical material depends upon the total amount studied, the units into which it was divided, the stage at which efficiency was tested, and whether the criterion was accuracy or time of recall. Achilles (1) has made an intensive study of recall and recognition and finds a low but positive correlation between the processes and low correla-

tions for recall or recognition of different materials. Both processes increase with age, and women and girls are slightly superior to men and boys. Skaggs (6), using nonsense syllables and poetry for material, found the interspersed method of reading recitation better than methods of grouping.

XVI. THE CURRICULUM.

Studies in the curriculum in general are not strictly of a research character, but there are several new publications that approach this field experimentally.

An outstanding study is Bobbitt's (1), which, by the method of examination and analysis, arrives at a statement of the specific aims of instruction. Bonser (2), Meriam (4), and Wells (7) have published texts on the elementary curriculum as organized about activities which are based on experimentation. Part I of the Twentieth Yearbook of the National Society for the Study of Education (6) contains a collection of 295 projects, classified by grades, which have been tried out in different schools. The Course of Study Monographs of the Berkeley public schools (8) are also the results of committee reports and classroom test. Charters' and Moore's books on the curriculum have just appeared.

Mott and Devricks (5), by means of a questionnaire addressed to 874 high-school graduates, have rated each subject of the high-school curriculum as to its value for economic use, enjoyment, citizenship, home making, and good will. On the basis of these ratings they advocate a redistribution of time among the different subjects.

Kehr (3) has made a comparative study of the college curricula for men and women, from which she concludes that for both sexes there is need for vocational guidance.

The Lincoln School, in New York, is making a thoroughly scientific study of the curriculum. Similar studies are being made in the Universities of Iowa and Chicago.

1. READING.

The subject of reading has predominated in the formulation of curricula studies. Part II of the Twentieth Yearbook of the National Society for the Study of Education was devoted to the subject of silent reading. To this study Thiesen (53) contributed a summary of the evidence of previous investigations as to the factors affecting results in primary reading, the most important of which he finds is probably intelligence. Other factors showing some correlation are interest, supervision, quality of teaching, amount of reading, eye movements, vocalization, attendance, comprehension of material, nationality, language used at home, and presentation of words in

context. Factors studied but on which the evidence was still inconclusive were kindergarten training, time, and phonetics.

Further studies in some of these factors have been made. Webb (59) reports correlations between Army Alpha scores and reading rate of $+0.49$ and with comprehension of $+0.68$; between Thurstone intelligence scores and reading rate of $+0.58$ and with comprehension of $+0.64$. Hunt (31) finds correlations between Otis intelligence and rate of reading of $+0.38$ and with comprehension of $+0.48$. Hunt has also found in a study of fourth and seventh grade children that extensive readers obtain higher scores in both reading rate and comprehension than do nonreaders. J. L. Green (23) also found a correlation between achievement in reading and amount done. Three experiments have been described in which special attention was paid to reducing vocalization.

O'Brien (41) carried out a controlled experiment in which different types of training in rapid silent reading were tried, one of which differed only in special attention being given to decreasing vocalization or inner articulation. This type of training resulted in marked superiority in amount of improvement made. Photographic records of eye movements showed this improvement was accompanied by a reduction in the number of fixation pauses and regressive movements but by little change in the length of pauses.

The other two experiments by Waldman (57) in fourth grade, and by C. W. Stone (51) with college students involved several other factors, so that the decrease in vocalization is not the only cause in their success in improving the reading ability of their students.

Buswell, by the method of photographing eye movements, has arrived at important conclusions reported in three different monographs. In the first of these three (10) he has found by synchronizing the photographic records of eye movements with dictaphone records of the voice that good readers differ from poor readers in the length of eye-voice span, in the number and duration of fixation pauses, and in the relative length of eye-voice span in different parts of the sentence.

In collaboration with Judd (34) he has made a scientific analysis of the various types of silent reading, comparing eye movements in skimming, careful reading, and study; and in the reading of simple prose, poetry, geography, history, and algebra texts, Latin and French. Most of the records showed that effort results in a narrowing of the span of recognition, lengthening of the fixation, and regressive movements, although some pupils seemed unable to change the level of attention. Latin pupils did not really read but puzzled out meanings. French pupils did much better.

In another study, Buswell (9) traces the development of the reading habit from the beginning to maturity. He found such de-

velopment to proceed by the reduction of the number and length of fixation pauses, and of regressive movements. Reduction in the number of pauses reaches a plateau in fourth grade. In the length of pauses the plateau is not reached until sixth, but growth in decrease of regressive movements continues into college. Development is quite different in type after the first four years. Correlations between these three types of data and Gray's oral and Monroe's silent reading tests are set forth in graphs. A comparison is made of different methods of reading, which shows that more than one method may succeed in developing mature reading habits, but different methods show quite different curves. He also shows by an analysis of individual cases how far children may deviate from the usual route and describes the remedial exercises used in those cases where the pupils had apparently deviated too far from the usual route to indicate probable attainment of efficiency. Breitweiser (6), in a monograph on training in rapid reading, reports an unpublished thesis by Fereshetion, of Colorado College, in which he demonstrates the possibility and value of pacing the eye movements in training for rapid reading.

Wilson (61) has studied the effect of different types of material on reading ability and found that reading ability varied greatly according to the type of material read.

Burgess (7), in a brief study, shows the advantage of grouping according to ability; Hawley (26), the effect of clear objectives; and James (32), the value of using the results of measurements in improving reading ability. La Rue (36) reports a small experiment in the use of the shorthand alphabet in teaching pupils to read and urges its adaptation to printing as a substitute for our English alphabet.

The value of rapid silent reading on ability to recall is demonstrated in experiments by Gilliland (19); Harvey (25), and O'Brien (41).

Special devices tried out with success and reported are the use of flash cards by Watkins (58); use of practice tests involving cut-outs, pasting in picture frame, picture dictionary, and story sheets by Nila B. Smith (47); and sets of reading cards, calling for action or language responses and used by the children as a game, by Hoover (28). A special technique followed in the University of Chicago laboratory schools, resulting from experimental study, is described by Shepherd (45).

The psychology of reading, with special references to disability, has also been studied by several investigators. Gates (18) includes spelling in his study in which he has attempted to devise a technique for diagnosis, to discover the factors in acquiring ability in reading and spelling, to ascertain the causes for disability in these lines,

and to try out remedial measures. The defects found associated with disability were those of mental ability, vision, articulation, eye muscular control, eye movements, eye-voice span, training, emotional stability, and also disinclination. He found no evidence for word blindness.

William S. Gray (21) reports the diagnosis and remedial treatment of 27 pupils backward in reading. For each case he gives a general description; preliminary diagnosis by means of intelligence and reading tests; detailed diagnosis by individual vocabulary test and analysis of types of difficulties; and study of eye movements and description of remedial instruction and its results.

C. T. Gray (20), in his monograph on deficiencies in reading, analyzes reading ability, and gives a compilation of tests and methods of observation to be used for diagnosis which includes tests for vocalization, eye movements, and breathing as well as the more usual reading tests. He presents a critical account of remedial work carried on by various teachers and investigators, and summarizes leading publications on reading. Fernald and Keller (15) report six extreme cases of nonreaders and describe the method used in treating them, calling particular attention to the need for study of kinaesthetic factors in the development of word recognition.

Other studies dealing with disability in reading are by Anderson and Merton (1), Freeman (16), and Poole (44).

Thiesen (54) has surveyed the provisions existing for individual differences in reading and makes suggestions as to which are of the greatest merit.

So much progress has been made in research in reading methods that courses and texts in teaching reading, based on scientific study, are beginning to appear. Among such may be listed courses outlined by Parker (43) and McFarland (39); and on methods by Leonard (37), Wm. A. Smith (48), Stone (50), Simpson (46), Wiley (60), Lloyd and Gray (38). Ballou (2) offers an outline of a normal course in beginning reading, the result of 103 questionnaires and opinions of 75 teachers.

Germane and Germane (17) have written a text on silent reading in which the topics of silent or oral reading, speed, comprehension, organization, retention, questionable methods, remedial work, measuring, and material are discussed and the finding of the leading investigations in these various lines reported. Methods and material suitable for each grade are outlined and lists of books and materials are given in the appendices.

Studies in content of reading courses have been approached in two main ways: One through a study of children's interests, the other by analyses of texts.

A study of the interests of children 2 to 7 years old and of the phrasing they themselves use in telling stories has resulted in the *Here and Now Story Book*, by Mitchell (40). Dunn (12) has studied the interests of children in grades one to three, and finds the reading materials best liked contains the factors of plot, narration, conversation, morality; for boys those factors also of surprise and interest in animals; for girls also the factors of child interest and familiar experience. She found their rating of material very different from that of adults. Jordan (33) investigated the interests of children from 9 to 18 years old. He found marked sex differences, which were greatest at 12 and 13 years old. The boys preferred in fiction, stories of war, scouting, school and sports, and adventure; in nonfiction, "what-and-how-to-do" books, and history and biography in exciting story form. The girls preferred fiction portraying home and school with other types such as fairy stories, and love, while tales with historical background were preferred by less than 10 per cent. They showed little interest in nonfiction. Jordan lists favorite authors and magazines for both boys and girls. Chamberlain (11) prepares a study on the difference in reactions to English classics where boys and girls recite separately. Eaton (13) has studied reading interests in high school. Though he, too, discovered the greatest interest in fiction and stories, he found over half the boys reading voluntarily essays and travel, biography, and science; 40 per cent reading history, 38 per cent poetry, and 26 per cent religious books; over half the girls read poetry and biography, 42 per cent religious books, 34 per cent essays and travel, 26 per cent history, and only 9 per cent science. He lists favorite magazines and authors for both sexes.

Uhl has two studies, one (56) on junior high-school interests in informational reading selections which showed the pupils to be much interested in selections on inventions, transportation, manufacturing, and cost of living; the other (55), based on reactions of 529 pupils, and a questionnaire sent 2,253 teachers resulted in the selection and grading of a number of selections of reading material. Desirable qualities included actions and character, adventure, humor, easy content and diction, familiarity, and portrayal of the supernatural, kindness, and loyalty. Green (23) found better readers less interested in fairy tales than poor readers.

King (35), in an investigation embracing about 4,800 children, has obtained a list of favorite poems for elementary school children which she presents, classified in order of frequency of choice, according to type of poem, and in a suggested course of study. She also lists the reasons given by the children for their choice.

Hosiac's (29) investigation in reading was carried along four lines: Opinions of authorities as to aims and methods of teaching

literature; analysis of "study helps" in four sets of readers; evidence as to common practice of teachers in teaching literature; and experimental teaching. This was to determine the relative value of different methods and devices. He concludes that informal methods and no insistence on details at the expense of the whole are to be preferred.

Burgess (8) has published a monograph on the measurement of silent reading in which she has made a useful exposition of the laws of a scientific procedure in the construction of reading tests; contributed an analysis of reading as a function; and set up a sample of experimental and statistical study.

Several analyses of texts to determine vocabulary or content have been made. Holmes (27) has analyzed a primer and two readers for phonic facts; Erick and Selke (14), the vocabularies of beginning books in 12 reading methods; and Packer (42), a number of first readers. All find most books contain words of very limited frequency, and a limited number of words are common to the different books.

Woody (62) and R. E. Stone (52) have studied the content of second readers; Starch (49) and Hosiac (30), that of readers for all grades in order to determine the amount of duplication or overlapping between different sets of readers, so that readers supplementary to each other may be selected more surely and in order to determine the type of material included.

In mechanics of reading books, Blackhurst has made two studies; one (4) on the size of type as related to readability in the first four grades, from which he concluded that 24-point type was best in grades one and two, and 18-point in grades three and four; the other (5) is a study of books used in grades one to six in different decades. In the later study he found size of type, length of line, and leading all had increased in every grade since 1890, the decade of greatest change being that of 1890 to 1900.

Bamberger (3) presents the results of a study on the effect of the physical make-up of a book upon children's selection. The factors of choice found are color of cover, nature of title, wide margins, and number and type of illustrations.

Surveys of reading ability have been made on Iowa children by Greene (22), and in Idaho by Harlan and Madsen (24).

2. HANDWRITING.

Freeman is still the leading investigator in the field of handwriting. He has published serially in the *Elementary School Journal*, (2) a course in handwriting for grades two to six, based on a preliminary course used experimentally in a public school in Kansas

City, Kans. He has also made a study (1) on the handwriting movement by means of an analysis of the movements of good and poor writers through motion-picture study. The amount of arm movement was measured by an instrument, giving a tracing of it and comparing the degree of correspondence of the tracing with the original writing. He found good writers showed a looser grasp of the pen, held the arm more nearly perpendicular to the writing and the forefinger lower than the thumb with wrist tilted not more than 45 degrees, but he found no evidence that the good writers used arm movement more than the poor writers. Of the 243 children studied, almost none had complete arm movement, although it had been taught them. In regard to speed he found that the good writer adapts the speed to the stroke, the speed being greater at the middle than at the beginning or end of the stroke, but there is no sharp contrast in speed. Using exercises based on these results, training classes were taught and showed greater progress than in two schools used as controls.

West (5) has studied the relation of rhythm to the handwriting movement and found imposed rhythm an aid only in early years: for a writer with habituated speed and rhythm would be slowed and the quality of his writing lowered by any beat slow enough to be consciously followed.

Shaw (3) reports an experiment in supervision of handwriting carried on in Detroit from which it was concluded that supervision does pay and that it is most effective when special attention is given to those in need of assistance.

Walker (4) describes what he calls the "unit plan of penmanship practice" developed in St. Louis in which pupils irrespective of class standing were divided into three groups of good, mediocre, and poor for writing lessons, and were promoted from one group to another individually. He found that the plan reduced failures, lessened time necessary, and simplified supervision.

3. MATHEMATICS.

Thorndike has been the leading contributor to research in this field. He has published several separate studies (24) and two books: One (21) on the new method in arithmetic which is based upon principles discovered by the psychology of learning, experimental education, and the observation of successful school practice; the other (23) on the psychology of arithmetic. In this book he discussed the function of bonds, control of the response connections, means of obtaining and of measuring improvement in their function, desirable degree of strength of bonds at different stages of learning, the original

tendencies on which the school may base its connection forming, application of laws of learning, and inheritance of special abilities.

In Algebra, Thorndike (20) has studied the abilities involved in algebraic computation, problem solving and intelligence, which he finds correlate highly; and the permanence of school learning (22) which he finds to be greater than the idea prevalent to-day. Woody (32) has corroborated the result in his study. Thorndike, in collaboration with Woodyard (25) has also studied the uses of algebra and geometry by means of an inventory of high-school textbooks and of articles in the Encyclopedia Britannica. They conclude that the parts of elementary algebra most used are the statistical graph and formulae and that mathematics is of importance to the understanding of subjects of general interest.

Woody (31) has investigated the types of arithmetic needed in certain types of salesmanship by means of an analysis of 4,661 bills of sale. Symonds (18) states 13 uses of mathematics found in society. He estimates the number of persons making such usage and suggests dividing the course of study into three parts in order to provide for different uses. G. M. Wilson (28) reviews previous studies and presents a study of problems actually solved by mature people as one method of determining the curricula in arithmetic. Rosenberger (12) urges the inclusion of the elementary calculus in the high-school course, basing his plea on a study of the status and present trend of mathematics in secondary schools in the United States and abroad, a historical survey of the growth of the calculus, and a comparison of textbooks. The Bureau of Education (9) publishes a bulletin on the course in mathematics in secondary education.

J. H. Smith (15), by measuring the time required for recall, has determined the relative difficulty of arithmetical combinations for each of the four fundamental operations. Osburn (3), through a study of errors in arithmetical fundamentals made by Wisconsin children, concludes that the comparison of numbers above the 5's is more difficult than that of those below, and addition of numbers whose sum exceeds 10 is more difficult than that of those whose sum is less than 10. Zero combinations, division of numbers by themselves, carrying, and particularly borrowing are difficult.

Spaulding (17) has analyzed six third-grade arithmetics in order to determine the exact nature of the work offered and how far the textbooks studied make an appeal to the needs and interests of the pupils. He gives tables showing the number and per cent of problems and examples in each text, and the distributions according to operation required, subject matter, occupations, and measurements involved.

Knight (6) analyzed 45 columns in addition drill exercises. He concludes that in construction of drill exercises the frequency with which different numbers appear in the columns is a poor index of the distribution of practice; and that the frequency of the unseen numbers should be considered as well as that of the seen numbers.

Marsh (8) has compared the school standing in second and third-year high school of pupils taking mathematics in first year with those who did not, the groups studied being almost exactly equal in first year. He found that those studying mathematics in their freshman year were decidedly superior in the work of the next two years in high school.

Buckingham (2) presents correlations between mathematical ability and intelligence that do not seem to show as close relation as previous studies.

Kolstad (7) found a definite relation between the school grade finished and one's ability in later adult life to solve arithmetic problems. He found the average American literate adult to have an ability equal to about that of seventh-grade school children.

Schorling (14) gives a description of experimental courses in mathematics tried out in 15 schools, which he considers not so much scientific experiments as "purposeful innovation."

Two studies on the relation of visual imagery to geometric ability are reported. Wood and Bell (29) found some correlation, but a lower one than that of immediate recall, verbal expression, and absence of motor manifestation with ability in geometry. Washburn, Hatt, and Holt (26) found good correlations between geometric ability and speed in control of visual imagery test and a slight correlation with accuracy in control of visual imagery.

Hoover (4) describes an extensive experiment in utilizing the play instinct in arithmetic drill by means of sets of cards involving the fundamental operations which were used as a game for children. The section using this method gained 17.8 per cent in accuracy as against 14.1 per cent for those not using it.

Kelly (5) has compared three types of drill in grades four to eight in Lawrence, Kans. The drill was carried on for 20 days and the results showed greater gains and better adaptation of drill to the individual child by both the Curtis and Studebaker material than by ordinary schoolroom procedure.

Estaline Wilson (27) and Newcomb (10) have described successful experiments in teaching methods of problem solving in arithmetic.

Beatty (1), in a study of 175 San Francisco pupils in grades four to six, concludes that the Austrian method does not show real superiority over the borrowing method of subtraction, for, although all the pupils had been taught by the former method, 121 used

another. The medium accuracy of those using the Austrian method was but 2.4 per cent higher than that of those using the borrowing, and their median rate was 8.2 as against the median rate of 9.2 of those who worked by the borrowing method.

Reese (11) has reported on the working out of the individual system at Winnetka in the case of arithmetic.

Terry (19) has investigated the reading problem in arithmetic through an examination of the methods used by adults by means of introspective reports, time and quantity records, and photographic records of eye movements. He found a special technique in reading numerals of one to seven digits which consists in locating the beginning and end of the numerals, developing habits of many brief eye pauses, and definitely grouping digits in pairs or by threes. In problems there is a partial reading of the numerals, a rereading either for further information or inspection before copying, and a second rereading during computation for such details as are required.

Schmidt (13) has studied 34 cases of extreme retardation in arithmetic, all of whom were normal in general ability. None were deficient in number sense. In 15 cases the trouble appeared to be due to ill health and in 14 to lack of interest. Ill health during third grade appeared to be particularly disturbing.

Wood (30) concludes from a study of a failure class of 34 in algebra that there is a relation between failure in algebra and a low grade of intelligence and that such classes are a waste of public-school funds.

H. J. Smith (16) has made a survey of the mathematics courses and requirements in industrial and vocational secondary schools.

4. SPELLING AND VOCABULARY.

In spelling and vocabularies we again find that research has reached the point when texts based on the results of research have begun to appear. Such texts are Horn and Ashbaugh's study (7), based on 11 investigations of correspondence (1) and graded as to difficulty (2) by actual study; the Test and Study Spellers by Starch and Mirick (20), whose vocabularies are selected on the basis of well-known spelling investigations; Jones (8), junior high-school writing vocabularies, based on 75,000 themes of 2,050 pupils; Thorndike's (21) work-book, which is an alphabetical list of the 10,000 most widely used words determined by a count of 4,656,000 words from 41 different sources, among which are correspondence, children's books, school texts, and other books covering a wide range of interest to be used as a check on what words a child should know, not as a speller; Kimble's (10) vocational vocab-

ularies for stenographers and court reporters; and Pryor and Pittman's (18) guide to the teaching of spelling, in which the methods and devices recommended are based on the principles formulated by scientific researches.

Further studies as to content have been made by Clarke (5), who, from a comparison of newspaper vocabularies, Ayres list, and the Everyday Speller, concludes that the present lists are inadequate because insufficient regard has been shown to geographical and social factors; by Capps (4) and Lester (11), who have worked on a high-school spelling course by collecting misspelling; and Briggs and Kelley (3), who have supplemented the Ayres list by securing the second and third thousand words most frequently used in correspondence.

Woody (24) has evaluated the subject matter in several spellers by comparisons with the scientifically derived lists.

Lester (13), in comparing lists of words commonly misspelled, calls attention to the discrepancies which may be due to differences in opinion as to what constitutes a misspelling. He has also made a study (12) of misspellings in college entrance examinations to determine how much simplified spelling really would simplify; and finds that only two rules would obviate a high percentage of misspellings. He suggests that these two rules and these alone be proposed for adoption. The board of education in Newark, N. J., (16) has published a very complete study of a spelling survey, giving their results by grades, schools, nationalities, and intelligence ratings with the Ayres and Newark standards.

Hawley and Gallup (6) report a study on the list versus the sentence method of teaching spelling and found no advantage in the latter. Morton (15) in five Ohio cities studied the sentence versus column tests and found the slight increase in correlation does not justify the extra expenditure of time and energy required for timed-sentence tests. Peters and McClure (17), from a study in written versus oral spelling in both study and recitation, conclude that the written method is preferable for the majority of pupils—about two-thirds doing better by the written, and one-third doing better by the oral method. They urge that future experimenters with method display their results in such a form as to indicate whether the method proves superior on the average, is somewhat better for all, or only better for some of the group while it is worse for the minority. If the best method proves to differ for different pupils it may be necessary "to segregate our pupils according to the forms which they learn best in addition to, or perhaps instead of, our present segregation on the basis of general intelligence." Wolfe and Breed (23) report a study of syllabification in teaching spelling, in which they found it pro-

duced slightly better results, especially with younger children. Weseem (22) reports the improvement of the spelling ability of university underclassmen by having them list their own misspellings as marked by their instructor of study.

Martin (14) describes an individualized method of teaching spelling, which was tried in grades four and five, in which a review and trial lesson of the week's work was given each Monday to determine which words each child needed to study and a weekly test on Fridays to check results. Richardson (19) gives an account of a "spelling campaign," in which the experimental groups eliminated 53 per cent of misspellings as against 10 per cent eliminated by the control groups.

Two experiments in word study are reported: One by Henmon (6a) to determine the outcome of a word-study course which appears to be of value; the other by Kellogg (9), an experiment to increase vocabulary by giving upper class high-school students two or three new words each day, which was also successful.

5. ENGLISH.

In English, the most elaborate study is that by Hudelson (5), reported in Part I of the Twenty-Second Yearbook of the National Society for the Study of Education. It deals with the aims and methods of teaching composition. Some of his conclusions as to aims and methods are: "That equal or nearly equal time is being spent in composition and literature; that rhetorical principles receive most emphasis; most use is made of and best results obtained from biweekly themes; errors and weaknesses are seldom corrected by the teacher except in matters of taste, and in questions demanding nice judgment or involving unfamiliar principles; and that English teachers recognize practically no fundamental functioning relation between oral and written composition." The aims set forth in the United States Bureau of Education Bulletin No. 2, 1917, are generally accepted and followed. Points considered by teachers as the most serious defects are lack of clearness, incomplete sentences, structural weaknesses, punctuation and capitalization errors. Misspellings are frequently undetected, and no distinction is made between spelling differences. Hudelson also presents new scales for measuring abilities in composition.

Wohlforth (12) and Malronev (13) have published a series of English texts containing drill lessons based upon scientific findings as to language errors and spelling weaknesses. Brown (2) has published an interesting compilation of 28 lessons on the technique of compositions chosen from the writings of successful authors. McGregor (9) has published a text on supervised study in English which

contains many sample lessons reported from the practices of the English department of the Washington Junior High School at Rochester, N. Y. Many assignments are worked out on the basis of minimum, average, and maximum difficulty. Project teaching and socialized recitation were used.

Heckert (3) reports an experiment in supervised study in English in the ninth grade which resulted in greater improvement on the part of the supervised group over that made by the nonsupervised group. Jordan (8) reports an experiment in 10 New Hampshire and Vermont high schools in which it was found that the comprehension by students of ordinary reading matter was low, but developed throughout high school, and that errors in composition decreased from year to year until the senior year when the number increased again, perhaps due to the greater stress laid upon literature in that year.

Correlations of language abilities have been calculated by Jamison (6), Van Wagenen and Kelly (10). Jamison found an apparent positive correlation between the abilities required for language and written composition. Van Wagenen and Kelly found low correlations between various language abilities and college marks and a correlation of $+0.52$ between the abilities in reading and composition.

Studies as to content of English courses have been reported by Hill (4), Johnson (7), and Wilson (11). Hill's report is a description of a course in community life English tried out in the University of Chicago laboratory school. Johnson's aim was to establish clear objectives in letter writing. He analyzed 150 "good" letters from the correspondence files of well-known women, several modern collections of literary letters, and 1,000 letters from women of approximately college freshmen standing. The "good" letters were characterized by courtesy, informality, humor, optimism, judgment, few centers of organization, and correct form. The student business letters showed errors more frequently than the social letters. The latter were characterized by optimism, crudeness, "newsiness," lack of organization, too much focusing on self, and inferior humor. Wilson makes a comparison of five studies of language errors of children. He concluded that the list common to different localities is very small, and did not find much difference by grades nor in oral and written lists. Verb errors made up 50 per cent of all and the errors were specific and could not be corrected by rules.

Bamesberger (1) has studied the standard requirements for memorizing literary material by means of a comparison of 50 city school courses of study. Her results are given in lists of poems according to frequency and by grades, a preferred list for study in which Atherton's list was also considered, lists of memory gems, Biblical material, and prose selections.

6. SPEECH.

Merry (2), in his report of the research committee of the National Association of Teachers of Speech, gives an excellent survey of the nature of research in speech education.

Some of the published studies in this field include: A survey of speech training in high schools of the United States, with recommendations for its improvement by Williams (5); a study by Woolbert (6) on the effects of the various modes of public reading; and three studies on corrective speech by Anderson, Starr, and Stinchfield.

Woolbert's study led to the conclusion that extreme change in all four attributes—pitch, time, quality, and intensity—appeared to the better rate, regulation of pitch changes appearing to be especially significant.

Stinchfield (4) reports a very high incidence of speech defects. In a study of 113 elementary school pupils, 93 had functional disturbances of speech, and 45—some of these the same—had organic speech defects. She gives a detailed classification and analysis of defective speech conditions, and causes of speech disorders. She also reports two type cases in which the speech was improved, and describes the materials used in the corrective methods.

Anderson (1) reports an experimental analysis of the causes of stuttering carried on by a series of tests used with "normals," ex-stutterers and stutterers. The results showed characteristic differences in hand coordination and memory span for movements. Stutterers had fewer partially inhibited responses. Ex-stutterers were unusually irregular in complex reaction time. Rapidity and regularity of tapping and disturbance in type of hand coordination seemed to be associated with improvement in stuttering.

Starr (3), by means of about 1,300 salivary analyses and psychological diagnosis judgments, found that 73.7 per cent of stammerers were subbreathers with a salivary P.H. considerably below normal; 15.4 per cent were distinctly psychopathic with a salivary P.H. above normal; and the others were hyperexcitable or combinations of the other types. Speech could be improved by treatment directed to improving these causes.

7. FOREIGN LANGUAGES.

In the field of foreign languages almost all the research has been in Latin, most of the research in this field being motivated by a desire to prove its worth.

Two brief studies have been made in the general field of foreign languages. Franzen (5), in 1921, made a survey of the enrollment

and courses offered in foreign languages in Iowa's secondary schools. He found Latin enrolling five times the number studying other languages, with French second, Spanish third, and Norse enrolling a few. Cook (4) has ranked as to relative importance the Romance languages, English, and Russian, according to the criteria of the number of people using each language, territorial possessions of countries using it, official recognition by government, and its dynamic quality and importance as a vehicle of thought.

Morrison (9) and Webb (14) have made studies of methods that bear on learning a foreign language. Morrison's study was a comparison of scores on prepared lessons in Latin or French translation and sight reading. Eleven, out of 67 students studied, made as good or better scores at sight as in prepared work. From his study he concludes that transfer from lesson learning to capacity is very uncertain and occurs in a small percentage. Webb reports a comparison of two methods of study—recall or study, in learning paired associates. He found 65 to 76 per cent of his subjects retained more and 16 to 24 per cent less by the recall method. Writing down the paired associates helped 57 per cent and hindered 38 per cent.

In Latin many of the studies have centered around the investigations being carried on by the American Classical League (3) (7), with the support of the General Education Board, in order to determine "to what extent the objectives commonly claimed for Latin are attained" and what content and methods are most favorable.

Newcomb (10) reports one phase of this investigation, namely, a comparison of the Latin and non-Latin groups in high school. In a study of 3,000 pupils in 85 schools, 65-per cent of the Latin group exceeded the non-Latin in intelligence, 57 per cent in reading ability, 68 per cent in knowledge of grammar, and 71 per cent in word knowledge. He found conditions varied widely in different schools and that the Latin pupils were a very heterogeneous group, but were the superior, on the whole, though not so much as has been supposed.

Brown (1), in a study of 29 Wisconsin schools, shows that very little progress in knowledge of Latin is made in the upper years and very little knowledge is gained in any year. Schools placing the chief emphasis upon formal grammar in the first year and later shifting to rapid translation gave the best results. Odell (11) studied 1,000 errors in Latin prose composition. He found that one-third of all errors are caused by lack of mechanical memory, one-fourth by lack of reasoning power, and nearly one-half to carelessness. Errors in declension comprised one-third, in conjugation one-fourth, in order 12 per cent, and in analysis 9.5 per cent.

Several studies of Latin in relation to English vocabulary are reported, one of which also attempts to show the value of Latin in

English composition and grammar. For this last study, Otis (13) paired 42 Latin pupils with 42 commercial pupils on the basis of intelligence and school grades. The Latin pupils showed slight superiority in composition and marked superiority in defining words. This increased power in English vocabulary on the part of students of Latin is found by all investigators reporting. Orleans (12), by the method of judgments, determined the possibility of transfer value of 2,000 words in the Thorndike word list.

Gilland (6) found a steady increase in the ability to define words with the number of years of study of Latin on the part of 115 college freshmen.

Carr (2), from the study of the reports of 7 high-school freshmen classes, concludes that during the school year the Latin pupils gain more than the non-Latin pupils in vocabulary; he thinks such transfer of training to the field of English vocabulary depends largely upon definite instruction and training in the technique of derivation.

West (15) reports a controlled experiment in the teaching of English derivatives from Latin, which was started in February, 1922, to be carried on for at least three semesters. Four groups are to be studied, two each of Latin and non-Latin classes. In one of each section definite training in etymology will be given.

Grinstead (8) found that a year's course in Latin is of value when emphasis is especially laid on etymology.

8. VOCATIONAL SUBJECTS.

Most of the studies in industrial arts, manual training, and home economics are in form of surveys (3, 9, 15, 20). The Bureau of Education (5) publishes a bulletin in reorganization of home economics in secondary schools. The most complete of the surveys in home economics is by Rugg (22), in collaboration with the departments of home economics at the University of Chicago and Iowa Agricultural College. It includes a study of existing courses, an analysis of texts, a study of literature on the subject to determine definite aims and objectives, and preliminary tests in the subject.

At the Teachers College, Columbia University, there is a class in investigation in cookery. Accounts of two of their experiments in pressure cookery (19) and the making of ice cream (18) have been published.

Newman (21) describes an experiment in a course in metal working presented by problematic question-lesson sheets.

Foulkes and Diamond (9) have made a study on the adaptation of courses in manual training to community needs and interests. They studied the uses the boys made of their training outside of school

and found the fifth and sixth grade boys made mostly articles for home and kitchen and toys, and furniture became increasingly popular from fifth to eighth grade.

Fuller (10) suggests a course in manual arts based on home repair and gives a classified list (according to frequency) of jobs found and lists of the tool processes, necessary to perform the jobs.

Two studies, one by Charters and Green (4), and one by Dyer (6), have been made on home-project work in agriculture. Dyer's is a study of prevailing practices in the North Central and Northeastern States. The other is a detailed study of the factors in efficiency of the boys' and girls' clubs. Some of these factors are a formal organization, frequent meetings, making reports and exhibits, memberships of 7 to 15, and, perhaps, a comparatively narrow age range of members.

Two bulletins on training for retail selling have been published. One (7) is based on a study of the vocational history of 5,000 juvenile workers in Boston's retail stores, made by the director of the Woman's Educational and Industrial Union, while the other is a description of the retail selling course in Pittsburgh high school (17), carried on as an experiment by the Carnegie Institute of Technology's Research Bureau, for retail training with the cooperation of the public schools and merchants.


Three studies on the present status of engineering courses are reported, one by Ayers (1), and two in Government bulletins (11, 14).

Hoke (13) presents a study in the improvement of speed and accuracy in typewriting by means of determining the relative frequency of the different characters on the keyboard and of errors. Correlations were found between infrequency of use and frequency of error. The relative abilities of each finger were studied. The author concludes that greater speed and accuracy would result from a rearrangement of the keyboard on principles underlying the touch method and a redistribution of finger loads.

Barton (2) has studied the relative value of using small or large units in learning to typewrite. His results are somewhat in favor of the larger unit.

Two books in a more general field of vocational education are: Hill's Introduction to Vocational Education (12), which treats of such subjects as education for the mechanical trades and industries, applications of psychology to instruction and adjustments of the individual and society; and Lyon's Education for Business (16), which presents a study of business operations and processes and applications of science to such.

9. SCIENCE.



General science seems to have the place of first interest in science, doubtless due to its comparatively recent entrance into the course of study. Most of the science studies, moreover, have taken the form of surveys as to the status of the subjects (3, 4, 8, 9, 15).

As to content of the courses, Webb (16) has made a study to determine the adaptation of general science in grades six to eight, and has also analyzed quantitatively the texts commonly used in general science. Stevenson (14) presents a list of minimum essentials in place geography based on the ranking of various items (e. g., rivers, capes, mountains, and lakes) by 55 experts. Branom (2) has made a study of what the business world demands of geography by means of a questionnaire. Some of his conclusions are that the subject is of importance, but too many high-school graduates and even college students have but a poor knowledge of the subject. More emphasis should be placed on the study of South America, Asia, and Oceania. A course in commercial and industrial geography in the eighth grade is desirable and less attention should be paid to minor problems.

Barthelmess (1) draws conclusions as to facts that pupils should know in geography from extensive testing carried on in Boston.

Finley (6) approaches the matter of content in general science through a two-part study of children's interests in science material, studying 1,716 children in grades 1 to 8. The first was an attempt to discover the true nature of the interest of children in animals. The method used was to present a salamander to the class who, after three minutes of silent observation, wrote down or whispered to the teacher the questions they would like to have answered about the animal. The questions asked were classified as to type of interest shown, and the differences from grade to grade were noted. Identification, environment, and food caused considerable interest; the life history, habits, and structure were other interests, the last two strongest in grade 4; and in grade 2 the teleological interest was strong. In the second part of the study, the investigator tried to find out which interested children more, plants, animals, or physical phenomena, by presenting the black skimmer, life-plant, and pendulum to the classes in an 8 or 10 minute talk followed up the next day by having the pupils write on their choice of the three. In 22 classes the bird was the most popular, in two the plant, and the pendulum in one.

Powers (13) reports a comparison of the achievement of high school and university students in chemistry, in which it was found that the difference between students who have taken chemistry in university freshman classes and those who have taken it in the

better high schools is small and both do better than those from small high schools. He gives in detail the types of tasks in which each group excelled.

Finley and Caldwell (7) have made an attempt to determine the types of information in biology which the public is now receiving. They studied articles bearing on the subject and classified the references. The articles found belong to eight main topics: Health, animals, plants, food, organizations of producers, evolution, nature, and fictitious. Only one-fourteenth of the articles are on the last four topics. The authors conclude that "since these types of biological knowledge are given to the public in such large quantities and over the whole country, the course in school biology should consider them as part of the foundation upon which to proceed in constructing a course of study."

On methods in teaching science, we have four studies. Bryson (5) found diagrammatic drawing increased the retention and recall of information in college and high-school classes. Phillips (12) concluded that laboratory experiments were no advantage over demonstration in teaching a law of physics but were of value in "familiarizing pupils with apparatus and method of procedure"; and that notebook recording was of value in making information more definite. Kiebler and Woody (10) also found the demonstration method secured as good results as the laboratory method, except in especially difficult experiments, and had the advantage of saving time. Meister (11) reports an attempt to measure the educational value of play with scientific toys which he found to be of decided value.

10. MUSIC AND DRAWING.

Very little has been done in the field of fine arts. In music, the outstanding contribution is Seashore's (8) survey of the musical talent of children in Des Moines public schools, using tests for sense of pitch, time, intensity, consonance, and tonal memory with comparisons with teachers' ratings in brightness, singing, rhythm, and amount of musical training the children had received. He has established norms for the fifth and eighth grades, standardized methods, apparatus, and technique, and presented principles for the discovery and conserving of musical talent. His study is the beginning of the development of a science of vocational and avocational guidance in the field of music.

Two brief studies of disabilities in music are reported, one by Kern (6) on the corrective treatment of a group of monotones, the other by Gaw (3), a study of 24 normal-school pupils who were unsuccessful in the study of music.

Feleky (1) has published a text on *The Musician's Mind*, in which she summarizes the replies to a questionnaire of 100 musicians and composers as to type of imagery, methods of learning and teaching, and effects of various factors on performance.

Frampton (2) conducted a questionnaire to determine what courses in music are offered by college extension departments and the U. S. Bureau of Education has published a bulletin on the music departments of libraries (10), and another on the present status of music instruction in colleges and high schools.

Hutson (4) and Scott (7) report surveys in a Minneapolis and a Massachusetts high school on the musical training and desires of high-school seniors, from which they conclude that there is a comparatively universal desire for music expressed in different ways and tastes, but that the students are handicapped in acquiring a musical education by its expense, lack of time, and argue for the educative value of music. Scott proposes a program for music in high schools.

Taylor (9) has published a text on *The Psychology of Singing*, dealing with modern methods of instruction, vocal science, and practical voice culture.

In drawing even less has been done. Whitford (11) gives a synopsis for planning courses in the different grades, based on data sheets submitted to 50 experienced teachers and supervisors of art who were asked to check the value of five art elements and of different types of art commonly taught in the public schools.

Jones (5) has made an attempt to discover the nature powers peculiar to children who have art ability through tests given to seventh and eighth grade children, and a questionnaire sent to over 200 artists. The conclusion appears to be that art ability and aesthetic appreciation are closely linked, and that the tests of visual memory and perception of perspective showed high correlations with drawing ability.

11. KINDERGARTEN.

Loeb (1) describes a little experiment in a public-school kindergarten to determine what materials and games children will choose voluntarily and what products result from their own planning. The Bureau of Education issues a bulletin (2) on a kindergarten-first-grade curriculum that is a composite product of 26 leaders in that field.

12. SOCIAL STUDIES.

Social studies in the curriculum are undergoing a decided change in form and content. Thus we find a number of surveys (9, 10, 14, 17, 18, 21, 22) as to their present status, some including all and others

only one of them, and covering all years from intermediate through college.

Experimental courses in high school are reported by Minor (13) on Current Events and Problems; by Shideler (19) on Modern Social Problems. Three experiments in the application of civic education or civic training are described: One by Coe (6), tried at Grafton, the results of which were checked by association tests and a control group; by Cheney (5), who describes the Lawrence plan for education in citizenship; and an experiment tried in the San Francisco Normal School (3), in which the special feature was a discussion by the children of social situations presented to them.

Tyron (23) has analyzed five texts in world history as a basis for a one-year course in world history. Dodd (11) has listed the historical references in the poems required for entrance to the University of Illinois as an aid to coordination between history and English curricula.

Studies in method in teaching history are reported by Rugg (16) on supervised study; by Beatty (4) on the use of pageantry and ritual; by Wilgus (25) on the laboratory method; and by Hatch (12) on the project method.

Voelker (24) has studied the function of ideals and attitudes in social education. Using the ideal of trustworthiness as the objective and devising tests of trustworthiness for measures, he studied the effect of training by methods similar to those used in the training of Boy Scouts. He had two experimental and two control groups. The experimental groups gained 13.5 per cent and 9.9 per cent; the control groups failed to improve.

But the best collection of studies in this field is to be found in the Twenty-second Yearbook of the National Society for the Study of Education (15). Chapter I in this book covers the situation and the need. Harold Rugg, in his chapter on "Do the Social Studies Prepare Pupils Adequately for Life Activities?" answers no and indicts the present scheme on the inadequate materials and insufficient provision for pupil activities. Judd argues for the junior high school as the favorable point for the introduction of the social studies. Marshall presents the proposal for the social-study curriculum of the commission of the Association of Collegiate Schools of Business (7, 8), which is set forth on the basis of the consideration that the organization of social studies should be in terms of the purpose for their introduction with consideration for vocational needs and in terms of the psychology of learning. Earle Rugg in chapter 4 discusses how the social studies curricula came to be what they are. Chapter 2 describes eight types of reorganized courses in social science being tried out in different schools, elementary, high and college. Chapter 3 tells how the new curricula are being con-

structed. Washburne, in chapter 12, describes the Winnetka social-science investigation. By the examination of about 15 issues of each of 18 periodicals of various types 81,434 allusions to historical or geographical facts were found, which were then classified and ranked according to periodical year frequency. Horn reviews different methods of research that have been used in scientific determination of the curriculum of history. Harold Rugg reports an investigation by means of the analysis of representative books in the social science field from which a course is drawn up based on the statements of contemporary problems and issues found in these books. Harap illustrates a method of curriculum revision which requires the cooperation of expert psychologists, administrators of education, and sociologists by means of first ascertaining present economic habits, comparing these with scientific standards of good living and social axioms of universal acceptance. Chapter 4 by Frank McMurray is a critical appraisal of the proposed reorganizations. The appendix contains a bibliography and a statistical representation of facts as current courses.

Alderman (1) has contributed to the content of civics courses a study of the various causes of litigation on the docket and the petitions filed in the district court of Johnson County, Iowa, in order to ascertain what an Iowa layman should know about courts and laws.

Almack (2) has listed measures submitted to voters through initiative and referendum in order to determine what civic problems should be studied.

Snedden (20) discusses the problem of methods for finding the objectives of civic education. He favors the method of "type-group" analysis. As examples, Professor Snedden gives 11 representative type-group studies made by his seminar. These not only illustrate the method but are themselves suggestive through their content.

13. MORAL EDUCATION.

The Character Education Institute award of a \$20,000 prize for the best plan for moral education was won by the Iowa Plan (I), which points out ways of securing moral results from the regular studies and school organizations by the use of problems and projects. The book includes rating scales and bibliographies.

Shepherd (33), who has made a study to determine the importance of different factors on the religious ideas and beliefs of children, concludes: (a) Education has been a very important factor; (b) social environment has been an influence; (c) children's confidence in others has been a very important factor; (d) authority has been concerned; (e) thought has been concerned; (f) the confidence

shown has been like that of primitive man in gaining his religious ideas; (g) the writer believes that these conclusions apply in greater or less extent to the religious ideas and beliefs of children of other ages than 8 to 13 years.

Everyday Manners, a book published by the faculty of the South Philadelphia high schools (2) for girls, is a result of a special study by a committee of students and teachers and discusses manners in the home, school, in public places, in business, and gives suggestions as to methods.

XVII. HEALTH.

The importance from the standpoint of education of the correction of physical defects and improvement of health is shown in studies by Mallory (14), who studied the relation of physical defects to school progress. He found a direct relation between low scores and physical defects. Ranked as to degree of handicap the defects are: (a) Nasal obstruction, (b) defective teeth, (c) defective hearing, (d) defective tonsils, and (e) defective eyes. Sandvich (22) compared the number of physical defects of children making high scores in intelligence tests with those making low scores. Rogers (20) studied the effect of adenoids and diseased tonsils. Six months after operation little improvement was shown, but after 12 months the test group had gained double what the control group did in weight, slightly more in height and also in speed of tapping, but no difference in grip, I. Q., or Healy test. Mason (15) describes a method tried at Lincoln School for reducing absences by keeping record of the number and causes of absence and requiring pupils to report to the school physician after absence from any cause. The result is that absences have fallen from 14.9 to 9.3 per cent. Todd (23), whose study was of high-school boys, suggests a curriculum and program providing time for corrective work in physical education.

Standards of growth have been studied by Baldwin (1), who has made an exhaustive study of the Physical Growth of Children; and by Packer and Moehlman (18), who have found standards for Detroit children by sex, age, and nationality. Both of these writers have studied the relation of growth to school progress and found it positive.

Several studies in reducing malnutrition are reported. In Kansas City (3) all children were weighed and measured three times a year and the findings used as a basis for teaching of hygiene, accessory feeding of underweight children, and other follow-up work. Results: 30 per cent underweight reduced to 19 per cent.

Ennis (5) found 15 per cent boys and 20 per cent girls in Evanston, Ill., to be 10 per cent or more underweight. The study is reported by schools.

Mudge (17) reports a 12 weeks' experiment with two groups of children which included educational, nutritional, and health work.

The United States Bureau of Education (6) has a bulletin on malnutrition and school feeding.

Mitchell and Forbes (16) report an experiment in nutrition classes in a New York City boys' school. But the most complete experiment in this line is reported in Health Education and the Nutrition Class (11) where various groups of children who were underweight were studied during three years. The remedial measures attempted are described. Attention is called to the effect of seasonal variation in gain in weight in comparing results. The authors also conclude that "the definition of malnutrition as a function of the height-weight relationship with the acceptance of a 7 per cent standard is not justified."

On hygiene of the eyes we have a United States Bureau of Education bulletin by Berkowitz (2), who presents a summary of facts concerning eye defects, lighting systems, arrangement of desks, blackboards, and other problems of the hygiene of vision; and a study by Wager (25) on a method for measuring the fatigue of the eyes by the speed of shifts in fixation varying distances. He found ocular powers ranging from a high resistance to fatiguing conditions to a ready susceptibility.

W. L. Holt (10) studies the effects of smoking on freshmen. He found fewer nonsmokers underweight, more of them on athletic teams and on honor list, and their grade average was 4.1 points higher than the smokers. Vaughn (24), in a tobacco survey of high-school boys, also found nonsmokers doing better work.

In accident prevention we have a United States Bureau of Education bulletin by Payne (19).

In physical education, Williams (26) has published a text on its organization and administration; Williams, Atkinson, and Brace (27) describe an experiment to determine the relative value of formal gymnastics and play in the fourth grade. The play group gained more in skill and alertness, obedience, height, weight, lung capacity, and heart condition. In strength and chest expansion the groups were about equal, and the formal group made slightly more improvement in posture.

In athletics, Gilchrist (7) gives ratings and suggests norms for boys and girls in track and field events. Kunkel (13) has studied the effect on enrollment of a winning football team and concludes that its advertising worth has been much overestimated.

The Cleveland Foundation (9) has made a recreation survey and made comparisons between school progress and spare-time activities.

In the matter of Sex Education we have a study by Gruenberg (8), which deals with its importance, methods, correlation with different subjects in the curriculum and preparation of teachers for this purpose. Hunter (12) tells of an experiment at Carleton College on movies in teaching social hygiene. Edson (4) reports a survey of the status of sex instruction in which a rather widespread belief in its need was found; the ratio of schools responding to questionnaire that gave sex instruction to those that did not was 11 to 16. The topics treated and subjects used as media for presenting phases of sex education are given.

Salisbury (21) has studied the legislative provision for physical education in different States and found 11 had good provision for it by laws, 9 others had mandatory and 3 more had permissive laws.

XVIII. VOCATIONAL GUIDANCE.

The present status of vocational guidance has been studied by Maverick (9) in Massachusetts, by McDougall (8) in 130 high schools, and by Edgerton (6) in 379 junior high schools.

Cowdrey (2), Proctor (12), and Vance (15) have studied the value of mental tests in vocational guidance. Proctor believes they are to be used along with teachers' estimates of ability, records of school success, and vocational ambitions of the pupil. His suggestions are mainly of a negative kind. Cowdrey calculated correlations between the different trades taught in the Whittier State School with mental and chronological ages and intelligence quotient, and computed critical upper and lower mental age levels for success. He found in no group success was wholly dependent on intelligence and that different trades were of three types where success was dependent on mental level, where the relationship was negligible, and where the work was better adapted to low levels of intelligence.

The use of mental tests in guidance of pupils in selection of high-school courses is discussed by Dickson (4) 1920, and Weisman (16) 1923, and Powers (11). Remming (13) obtained answers from 93 high-school students as to the reasons why they chose subjects, and urges that students be given more instruction as to what different subjects treat of in order that they may choose more intelligently.

The vocational interests of high-school seniors of the State of Washington was studied by Douglas (5). He found more girls and boys from large schools planning to enter business and more girls from small schools teaching, and more boys agriculture. On the whole, too many boys planned to take up engineering or law and too few agriculture and the ministry. Very few were choosing because of fitness and 58 per cent did not expect to remain permanently in the lines of work in which they would immediately engage.

Crathorne (3) has studied the change of mind between high school and college as to life work. He found that about one-half of the 57 per cent who entered high school with an occupation in view had changed their minds by the freshman year at college. He gives the results by occupations and sex. Miner (10) describes an experiment in helping high-school students to observe their own vocational interests by filling out blanks which analyzed and summarized interest bearing upon vocational satisfactions and classifying the occupations according to the types of activities employed.

In 1920 the recreational, reading, and vocational interests of 800 girls 6 to 20 years old were studied by Wheeler (17). He found a very limited range of vocations known to the girls.

A guide to the study of occupations in order to assist in vocational guidance has been published by Allen (1) and Freyer (7). It gives two tables of intelligence standards for 96 occupations based on the Army studies and verified by studies of the Central Branch Y. M. C. A. of Brooklyn. Thorndike and Symonds (14) have compared the occupations of high-school graduates and nongraduates.

XIX. SELECTED SURVEYS.

During the past two years school surveys have become less frequent and more specialized in type. At least 14 States have conducted surveys of scientific significance on curricula, buildings, finance, supervision, high schools, teacher training, and rural schools. A number of mental surveys have been started and a few completed:

ALABAMA.

Brenner, Thomas E. A comparative study of the elementary schools, white and colored, of the 67 counties of Alabama. Montgomery, Ala., Brown Printing Co., 1921. 14 p., charts, tables.

ARKANSAS.

U. S. Bureau of Education. The Arkansas survey report (abridged). Little Rock, Ark. [1922]. 83 p. (Journal of the Arkansas Educational Association, vol. 6, nos. 3-4, July-October, 1922.)

CALIFORNIA.

Hart, Frank W. A school building and school housing program for Napa, Calif. Berkeley, Calif., University of California, 1921. 64 p., tables, charts, maps. (Dept. of Education. Bureau of Research. Study 2.)

— and Peterson, L. H. A school building survey and school housing program for San Rafael, Calif. Berkeley, Calif., University of California. (Dept. of Education. Bureau of Research. Study 8.)

McNaught, M. S., and Richards, E. M. Report of the survey of schools of Nevada County. Sacramento, Calif., California Board of Education. (Bulletin no. 28.) 28 p.

Williams, J. H. A survey of the pupils in the schools of Bakersfield, Calif. Whittier, Calif., Whittier State School, Dept. of Printing Instruction, 1920. 43 p.

COLORADO.

- (City and County of Denver, Colo.) School District No. 1. Sixteenth annual report for the year ending June 30, 1919. Denver, 1920. 278 p., illus.
- Fruita, Colo., Board of Education. An educational survey of the Fruita (Colo.) Union High School District, including school districts Nos. 2, 7, 23, 25, 27, and 37. 1921. 111 p.

The rural high-school district includes social and economic survey.

CONNECTICUT.

- Davis, Jesse B. A survey of the organization and administration of high schools in the State of Connecticut. Hartford, Conn., State Board of Education, 1921. 37 p.
- Southington, Conn. School Board Annual Report, 1922. 69 p.

Part 1 deals with a health survey. Part 2, the superintendent's report; includes educational tests. Part 3, finance.

DELAWARE.

- U. S. Bureau of Education. Survey of the schools of Wilmington, Del. Bulletin, 1921, no. 2. 132 p.

FLORIDA.

- Roemer, Joseph. A study of Florida high schools. Gainesville, Fla., University of Florida, Dept. of Secondary Education, 1921. 29 p., tables.

GEORGIA.

- Duggan, M. L., and Bolton, E. B. Educational surveys of various counties in Georgia. Atlanta, Ga., State Department of Education, 1921-22. Nos. 27-38. 554 p.

Twenty-seven, twenty-eight, and twenty-nine by M. L. Duggan only.

- Fernandez, Alice B. A school building program for Athens, Ga. U. S. Bureau of Education. Bulletin, 1921, no. 25.
- Strayer, George D. Report of the survey of the public-school system of Atlanta, Ga. (School year, 1921-22.) New York, Columbia University, Teachers College, Institute of Educational Research.

Survey made by Division of Field Studies.

HAWAII.

- U. S. Bureau of Education. A survey of education in Hawaii. Bulletin, 1920, no. 16. 408 p., illus., tables.

Gives data regarding races, population, occupations, administration, finance, task of Americanization, and status of education.

IDAHO.

- Sears, J. B. The Boise survey. Yonkers, N. Y., World Book Co., 1920. 290 p. Administration, organization, staff, curriculum, progress, and health.

INDIANA.

- Book, William F. The intelligence of high-school seniors. New York, Macmillan Co., 1922. xviii+37 p.

KANSAS.

- University of Kansas. Extension Division. School survey of Lawrence, Kans. Bulletin, vol. 23, no. 1, Jan. 1, 1922. 100 p., illus., tables, charts.

KENTUCKY.

General Education Board (N. Y.). Kentucky Educational Commission. Report on public education in Kentucky. New York, 1922. ix+213 p., illus., charts, tables.

LOUISIANA.

U. S. Bureau of Education. Survey of the schools of Caddo Parish, with special reference to the city of Shreveport, La. Baton Rouge, La., State Department of Education, 1922. 136 p., incl. tables.

MAINE.

Augusta, Me. Board of Education. Report of the survey staff. Augusta, Me., Kennebec Journal Print Shop, 1922. 242 p.

MARYLAND.

General Education Board (N. Y.). Maryland Educational Survey Commission. Public education in Maryland. New York, General Education Board, 1921. 230 p., illus., charts, tables.

Strayer, G. D. Abstract of a survey of the Baltimore public schools, 1920-21. Baltimore, Md., Board of School Commissioners, 1921. 54 p., front.

— *and others.* Baltimore school survey. 2 vols. Baltimore, Md., Public Improvement Commission, 1921-22.

Vol. 1, The schoolhouse and school building program. (1921.)

Vol. 2, The administration of the public schools and other studies. xxiv + 302 pp., tables, diagrams. (1922.)

MASSACHUSETTS.

Spaulding, Frank E. Principles, policies, and plans for the improvement of the New Bedford public schools. New Bedford, Mass., School Commissioners, 1922.

U. S. Bureau of Education. A survey of schools in Winchester, Mass. Bulletin, 1922, no. 43. 193 p.

— School building program for Gloucester, Mass. Bulletin, 1920, no. 28. 16 p.

MICHIGAN.

Detroit, Mich. Department of Special Education and Bureau of Statistics and Reference. Age, grade, and nationality surveys. Research bulletins, no. 2, Dec., 1920, 24 p., and no. 7, Jan., 1922.

MINNESOTA.

Neale, Mervin G., and Severson, Sigurd B. A school building program for the city of Winona, Minn. Minneapolis, Minn., University of Minnesota, 1922. 26 p., graphs, tables.

Nears, J. B., and others. The Arlington school survey. Minneapolis, Minn., University of Minnesota, 1921. 58 p., graphs, tables, field maps. (Bulletin, vol. 24, no. 28.)

Part 1 reviews school problems; Part 2, gives data and comparisons; Part 3, remedy.

MISSOURI.

Moore, Elizabeth. Rural school health survey. Saint Louis, Mo. Missouri Tuberculosis Association, 1922. 46 p.

NEBRASKA.

Olsen, Hans C. A study of educational inequalities, being a survey of certain aspects of public education in Buffalo County, Nebr. Kearney, State Industrial School Press, 1921. 163 p., front., maps.

NEW JERSEY.

Report of the survey of the public-school system of Lawrence township. Mercer County, N. J.

Women's Club of Orange, N. J. Report of the study of the school systems of East Orange, Orange, South Orange, and West Orange. Orange, N. J., Chronicle Publishing Co., 1922. 48 p., incl. diagrams.

NEW MEXICO.

Bagley, W. C. Report on the New Mexican State educational unit and the general educational system of New Mexico. Santa Fe, New Mexico Pub. Corp., 1921. 62 p.

NEW YORK.

Butterworth, Julian E. Rural school survey of New York State. Ithaca, N. Y., Joint Committee on Rural Schools.

Condition of school buildings.

Eaton, Theodore. Rural-school survey of New York State. (Vocational education.) Ithaca, N. Y. 293 p.

Haggerty, M. E. Rural school survey of New York State. (Educational achievement.) Ithaca, N. Y. 1922. 223 p., diagrams, tables.

New York (State) University. Survey of Livingston County schools. Albany, N. Y., 1922. 143 p., illus., tables, charts, diagrams, maps, plans. (Bulletin no. 738.)

Updegraff, Harlan. Rural school survey of New York State. (Financial support.) Ithaca, N. Y., 1922. 233 p., diagram, tables.

Works, G. A. Joint committee on rural schools. A report to rural school patrons. 1920. 272 p., illus., tables, charts.

NORTH CAROLINA.

Bawden, W. T. Educational survey of Elizabeth City, N. C. U. S. Bureau of Education. Bulletin, 1921, no. 26. 43 p.

Cook, Katherine M. Suggestions for the reorganization of the schools in Currituck County, N. C. U. S. Bureau of Education. Bulletin, 1921, no. 24. 31 p.

State Educational Commission of North Carolina. Public education in North Carolina. 137 p., illus., graphs, tables.

OHIO.

Cleveland, Ohio. Board of Education. The first of a series of surveys of the department of instruction of the Cleveland public schools. Cleveland, Ohio, 1922. 29 p., incl. tables, diagrams.

Landrittel, F. C. Survey of the educational conditions in Fairfield County, Ohio. Columbus, Ohio, 1921. 53 p., tables.

Packer, P. C., Anderson, H. W., and Brueckner, L. J. Survey of public-school building requirements in Cleveland Heights, Ohio. Cleveland, Ohio, Board of Education, 1920. 39 p.

Riegel, Vernon M. A study of rural school conditions in Ohio. Columbus, Ohio, Department of Public Instruction, 1920. 175 p.

OKLAHOMA.

Rinsland, Harry D. Survey of Johnston County, Okla. Ardmore, Okla.

U. S. Bureau of Education. Public education in Oklahoma. Washington, D. C., 1922. 420 p., maps, tables, charts, graphs.

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Stetson, Fred L., and Almack, John C. County school systems of Oregon ranked in the order of their merit. Salem, Oreg., State Printing Dept., 1921.

PENNSYLVANIA.

Harrisburg, Pa. Board of Education. Report of a survey of the system of supervision of the elementary schools. Harrisburg, 1920. 33 p., tables.

La Rue, Daniel W., and Nagle, Chas. J. Educational survey of Honesdale, Pa. East Stroudsburg, Pa., Press Publishing Co., 1921.

Public Education and Child Labor Association of Pennsylvania. Report of the Philadelphia school survey. 4 vols. Philadelphia, 1922. 1351 p., illus.

Book I, Personnel, school plant. Book II, Organization, administration, pupils. Book III, Types of schools and teachers; vocational education. Book IV, Instruction.

Ross, Cannon. The status of county teachers' institutes in Pennsylvania. Philadelphia, 1922. xvi+168 p., tables, forms.

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Scranton, Pa., Board of Education. Survey of the Scranton public schools, 1918-1920.

Updegraff, Harlan, and King, Leroy A. A survey of the fiscal policies of the State of Pennsylvania in the field of education. A report of the Citizens' Committee on the Finances of Pennsylvania to Hon. Gifford Pinchot. Part II, Education.

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Gibson, Carleton B. Industrial educational survey of Charleston, S. C. Charleston, S. C., Walker, Evans, & Cogswell, 1920. 174 p.

Thomas, John F. School survey of York County. Winthrop College Bulletin 14, no. 1, September, 1920. 87 p., illus., tables, diagrams.

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Snoddy, George S., and Hyde, George E. Mental survey of Utah schools and adaptation of the Army beta tests. Salt Lake City, Utah, 1921.

Published by University of Utah, Dept. of Psychology, in cooperation with the State Board of Insanity.

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State Board of Education. Rural schools of Vermont and their improvement. Montpelier, Vt., Capital City Press, 1922. 64 p., illus., plans.

VIRGINIA.

Dearborn, W. F., and others. Psychological and educational tests in the public schools of Winchester, Va. Charlottesville, Va., University of Virginia, 1922. 54 p.

Haggerty, M. E., and others. Virginia public schools. Part II, Educational tests. Yonkers-on-Hudson, N. Y., World Book Co., 1921. xii+235 p., tables, charts.

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Carmichael, H. E., and Koon, C. M. Educational survey of the schools of Clay District, Marshall County, W. Va. [n. p., 1922.] 43 p., incl. illus., portraits, diagrams, front. (map).

U. S. Bureau of Education. Educational survey of Wheeling, W. Va. Bulletin, 1921, no. 28. 53 p.

West Virginia. Board of Education. Educational survey of the Phillippi school system. Phillippi, W. Va. 1921. 39 p.

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WISCONSIN.

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