less than 128 and greater than 32, is $(x - 1) + \{(x - 1) + (x - 2) \ldots + (x - 31)\} = x - 1 + 31(x - 16) = 32x - 497$.

UNIVERSITY OF TEXAS, *November*, 1893.

BIBLIOGRAPHY OF MATHEMATICAL DISSERTA-TIONS.

Catalogue des Thèses de Sciences soutenues en France de 1810 *à* 1890 *inclusivement.* Par ALBERT MARIE, Bibliothécaire universitaire. Paris, H. Welter, 1892. 8vo. xi+224 pp.

Verzeichnis der seit 1850 *an den deutschen Universitäten erschienenen Doctor-Dissertationen und Habilitationsschriften aus der reinen und angewandten Mathematik.* Herausgegeben auf Grund des für die Universitäts-Ausstellung in Chicago erschienenen Verzeichnisses. München, 1892. 8vo.

IT is generally a matter of considerable difficulty to obtain information in regard to doctors' dissertations. They appear unannounced, at irregular intervals, in many places, and are usually the productions of authors as yet unknown. Separate publications of no great size, relating to subjects of a highly special character, they are often of but little-interest except to the author. Still they are sometimes of the highest scientific importance, and the two recently published lists of the dissertations of the French and German universities will be of great value.

The contents and arrangement of the French catalogue are described in its preface, from which the following notes are extracted.

The special schools of science established in 1802 conferred no degree, and the creation of the faculties of mathematical and physical sciences in 1808 marks the commencement in France of courses in science leading to the doctorate.

The total number of dissertations at Paris from 1811 to the end of 1890 is 701. These are classified as follows : mathematics 184, physics 281, natural science 236.

Those from the Departments * number 172, classified as follows: mathematics 44, physics 61, natural science 67.

The arrangement of the list is first according to location, and then chronological. Each entry gives the name of the author; place and date of birth, and of death (if dead); official positions held; title of dissertation, publisher, date o:

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* Besançon 8 ; Bordeaux 5 ; Caen 7 ; Clermont-Ferrand 1 (1858) Dijon 10 ; Grenoble 9 ; Lille 8 ; Lyon 14 ; Marseille 5 ; Metz 1 (1813) Montpellier 36 ; Nancy 9 ; Poitiers 2 ; Rennes 2 ; Strassburg 52 Toulouse 16.

publication, number of pages, size; register number, and date of presentation. The absence of the register number indicates, in the case of Paris only, that the dissertation was not accepted. This is not true for the Departments, since owing to imperfect registration not only the numbers but often the dates of acceptance have been omitted. The work closes with an index to authors, and a very extensive alphabetical subject-index. In the latter many of the dissertations are mentioned in several places corresponding to the principal words of their titles.

The German list occurs in two editions. It was originally compiled under the direction of the Minister of Instruction of Prussia for the special catalogue * of the mathematical exhibit of the German universities at Chicago. The collection of dissertations of the University of Marburg was the basis of the compilation. Feeling that the list would be of interest to a larger circle of readers, the German Mathematical Association obtained permission to have it published separately. By the help of the other university libraries several titles which were omitted from the other edition were supplied.

The list gives the author's name, title of dissertation, date, and size. Those from each university are arranged together in alphabetical order. The number of doctors' dissertations since 1850 is as follows: Berlin 96; Bonn 43; Breslau 56; Erlangen 24; Freiburg i/B. 11 ; Giessen 20; Göttingen 134 ; Greifswald 15 ; Halle 78; Heidelberg 18 ; Jena 82; Kiel 19; Königsberg 31 ; Leipzig 65; Marburg 91 ; München 29; Münster 16 ; Rostock 52; Strassburg 17; Tübingen 33 ; Würzburg 7—total number 939. The list also includes 50 inaugural addresses (Habilitationsschriften).

" The list shows most clearly, by the many fields of work which the papers cover, the individual characters of the several universities and how each teacher develops in his instruction the subjects of his own investigation. Herein is to be found the fullest expression of the efficiency of the mathematical seminary." †

A comparison of the two lists shows that since 1850 the twenty-one German universities have accepted 939 dissertations upon mathematical subjects, and that from 1850 to 1890 those accepted at Paris numbered about 144, and from the sixteen Departments about 24.

A list of the small but increasing number of dissertations accepted by the American colleges and universities would be of considerable interest, as it would tend to show to what ex-

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* Special-Katalog der mathematischen Ausstellung (Gruppe X der Universitäts-Ausstellung). Bearbeitet von D⁻ Walter Dyck. Berlin, 1893. 8vo. xii+116 pp.
† Preface to the Special-Katalog.

tent and in what directions the authors of these products of an "infant industry" may be expected to develop. Let us hope that some one will undertake the task.

E. M. BLAKE.

COLUMBIA COLLEGE, *January*, 1894.

THE TEACHING OF MATHEMATICS IN THE SECONDARY SCHOOLS.

*EXTRACT FROM THE REPORT RENDERED TO THE NATIONAL EDU-CATIONAL SOCIETY, DECEMBER 4, 1893, BY THE COMMITTEE ON SECONDARY SCHOOL STUDIES.**

At the meeting of the National Educational Association held in Saratoga, July 9, 1892, a committee of ten was appointed to organize a series of conferences upon the subjects and methods of instruction in the secondary schools and to prepare a report based upon the results thus obtained. The members of this committee were: Charles W. Eliot, President of Harvard University, Cambridge, Mass., *Chairman;* William T. Harris, Commissioner of Education, Washington, D. C.; James B. Angell, President of the University of Michigan, Ann Arbor, Mich.; John Tetlow, Head Master of the Girls' High School and the Girls' Latin School, Boston, Mass.; James M. Taylor, President of Vassar College, Poughkeepsie, N. Y.; Oscar D. Robinson, Principal of the High School, Albany, N. Y.; James H. Baker, President of the University of Colorado, Boulder, Colo.; Richard H. Jesse, President of the University of Missouri, Columbia, Mo.; James C. Mackenzie, Head Master of the Lawrenceville School, Lawrenceville, N. J.; Henry C. King, Professor in Oberlin College, Oberlin, Ohio.

The persons selected by them to hold the conference upon mathematical studies were the following: Professor William E. Byerly, Harvard University, Cambridge, Mass ; Professor Florian Cajori, Colorado College, Colorado Springs, Colo.; Arthur H. Cutler, Principal of a Private School for Boys, New York City; Professor Henry B. Fine, College of New Jersey, Princeton, N. J.; W. A. Greeson, Principal of the High School, Grand Rapids, Mich.; Andrew Ingraham, Swain Free School, New Bedford, Mass.; Professor Simon Newcomb, Johns Hopkins University, and Washington, D. C.; Professor George D. Olds, Amherst College, Amherst, Mass.; James L. Patterson, Lawrenceville School, Lawrenceville, N. J.; Professor T. H. Safford, Williams College, Williamstown, Mass.

We reproduce below the remarks of the committee in regard to the report of the mathematical conference. The report of the committee, with the reports of the several conferences appended, may be obtained from the U. S. Bureau of Education upon application.—EDITORS.

THE form of the report of the Conference on Mathematics† differs somewhat from that of the other reports. This report is subdivided under five headings : 1st, General Conclusions. 2d, The Teaching of Arithmetic. 3d, The Teaching of

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* U. S. Bureau of Education, Circular No. 205 (1893), 8vo, 249 pp.
† *Ibid.*, pp. 104–116.