iel Riordan, pastor of St. Elizabeth's parish, Chicago, and Rev. Father Joseph F. Mooney, vicar-general of the diocese of New York, and from these the Pope will select the rector, who will probably be the first recommendation of the board. The board of directors decided that the term of rector should be limited to six years.

THE will of the late P. B. O'Brien, of New Orleans who died a few days ago, leaves $150,000 to the Catholic University at Washington to endow three chairs.

DISCUSSION AND CORRESPONDENCE.

HALSTED ON THE STRAIGHT.

HAVING returned from Russia so recently as not yet to be abreast of our current scientific literature, it is to the courtesy of the editor of SCIENCE that I owe my knowledge of the appearance in that journal of an important note by Prof. Fiske, headed 'The Straight Line as a Minimum Length.'

This note is right in maintaining that for the comparison of non-congruent lines, *e. g.*, the straight and circle, an assumption in addition to those of Euclid is essential. The strange thing about it is that in stating what Prof. Halsted 'appears to believe,' Prof. Fiske credits me with ignorance of the very principle which I of all the geometers have set forth most strenuously. To attract particular attention to it, I, in my Elementary Synthetic Geometry put it in the following somewhat bizarre form:

"In accordance with our definition of equivalent magnitudes, as such as can be cut into pieces congruent in pairs, no arc can be equivalent to a sect [piece of a straight]."

For the sake of comparison we make the following assumptions:

1. No arc is less than its chord.

2. No minor arc is greater than the sum of two tangents from the same point to its extremities.

By these paradoxal assumptions we attribute length to the curve, and can, *e. g.*, evaluate the circle in terms of its diameter to any desired degree of approximation."

GEORGE BRUCE HALSTED.

THE CURVE-TRACING TOP.

EDITOR OF SCIENCE: In your issue of October 9th, Mr. Warring refers to the very interesting and instructive article by Prof. Barus on the curve-tracing top or 'gyrograph,' which article appeared in SCIENCE on September 25, 1896. Mr. Warring suggests as an improvement in the apparatus that, instead of a lead pencil and paper arrangement, a smoked glass be used, the plate to be afterwards flowed with thin varnish. I would suggest, as a further modification, a very simple process which I have found of great convenience and service in a number of self-registering and tracing devices. Long ago I discarded the use of smoked glass in favor of glass plates coated with a thin layer of printer's ink. The ink can be applied with an ordinary hand-press roller, and can be distributed with almost perfect uniformity. The plate so prepared should receive the tracing while the ink is wet; then by exposure to the air the ink dries and the record is comparatively permanent. Such a plate may be used as an ordinary photographic negative in making blue prints or silver paper copies.

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GEOLOGY IN THE COLLEGES OF THE UNITED STATES.

IN the discussion and correspondence of October 2d, Mr. F. W. Simonds, of the University of Texas, discusses Prof. T. C. Hopkins' report on this subject. It seems to me that Prof. Simonds treats altogether too severely those smaller colleges which still give courses in his judgment inadequate. It is scant justice to class all those who do not furnish contributions to geological literature as amateurs. It does not follow that a teacher who is occupied with details of administration to the exclusion of authorship is not quite as good a teacher as another who may contribute many papers.

The contention that geology is a subject of as great disciplinary value as the other sciences no one will dispute.

The situation in the smaller colleges is something like this: Many of them are unable to develop all lines of scientific work in a disci-

plinary form. They have quite generally followed a plan which has so good a warrant as the example of the Johns Hopkins University. The biological work was there developed along zoological lines while the botanical remained in a condition perhaps to be termed inadequate. It certainly seems better to place some lines of instructions upon a fairly adequate basis than to make all inadequate by trying to cover them all. If geology cannot be taught as a matter of discipline without sacrificing biological, chemical or physical instruction, should it be excluded altogether? I cannot think so, geology has a value as information and may be so imparted as not to give the student any undue sense of having learned all that can be learned. That it is so treated in many of our colleges and that the results are good I wish to bear most emphatic testimony. Few institutions can feel that they are accomplishing all that they would like to do. It is, however, true that in many a small college teachers of real power and inspiration are sacrificing the opportunity to make themselves known and recognized in their sciences in order that they may make their instruction more adequate. That they are succeeding is clearly evidenced by the steady stream of men who are passing from their institutions in the graduate courses of the universities.

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SCIENTIFIC LITERATURE.

Life Histories of North American Birds, from the Parrots to the Grackles, with special reference to their breeding habits and eggs. By CHARLES BENDIRE, Captain and Brevet Major U. S. A. (Retired). Smithsonian Contributions to Knowledge. Large 4to, pp. 518, col. pls. 7. Dated 1895; published September, 1896.

Probably no work on American birds since Audubon's Ornithological Biographies has been looked for with greater eagerness than the second volume of Bendire's 'Life Histories of North American Birds.' The first volume was a surprise, both to ornithologists and to the public. A good book was expected, but no one was prepared for the great mass of new information it contained or for the high technical knowledge shown in its preparation. The colored plates of eggs were the finest ever produced, and the demand for the work was so great that, although sold at the relatively high price of $7.50, the edition was soon exhausted. Naturally, the appearance of the second volume has been anxiously awaited by all classes of bird lovers from the technical ornithologist to the popular observer. On running over its handsome pages one is impressed by the fact that it is even better than the first, and that the plates also, if possible, are superior.

The scope of the work is comprehensive. All of the birds of the American Continent occurring north of Mexico are included. The first volume contained 416 large quarto pages and 12 colored plates, and treated of the Grouse, Pigeons, Hawks and Owls—146 species and subspecies in all. The present volume comprises 518 pages and 7 colored plates of eggs. It treats of the Parrots, Cuckoos, Anis, Roadrunner, Trogon, Kingfishers, Woodpeckers, Nighthawks, Poor Wills, Swifts, Hummingbirds, Flycatchers, Larks, Magpies, Jays, Crows, Orioles and Blackbirds—in all about 200 species and subspecies. The classification and nomenclature of the A. O. U. Check List are followed and references are given to the first name of the species and to the combination adopted. Following this brief synonomy is a complete concordance to the numbers the species bears in each of the five check lists from Baird's original list of 1855 to the American Ornithologists' Union list of 1895. The geographic range of the species is then summarized in a brief paragraph and is afterward given in greater detail, along with the dates of arrival at different points in its migratory range, the relative abundance of the species in different localities, and the local names by which it is known. Much attention is given to food and breeding habits, the accounts of which are graphically written and, as a rule, form the greater part of the biographies. Except in the very few instances in which the eggs are unknown, the history closes with a description of the nest and eggs, with average, maximum and minimum measurements (both in millimeters and inches).

The greater part of Major Bendire's life has