parison was made between these methods and others that have been proposed. Attention was called to the necessity of defining the substances present by the methods by which they are to be determined and reckoned, as it not infrequently happens that there are differences of opinion as to the form in which they occur and the methods for determining them, and a dispute is most easily avoided by a prior technical convention. Thus there is a difference of opinion as to the form in which a portion of the nitrogen present in these acids occurs, some regarding it as in the form of hyponitrous acid, others as nitrosulphuric acid, but without expressing any opinion on this point the specifications simply required that it should be determined in a carefully prescribed manner and reckoned as N_2O_4 , and that as thus determined and reckoned it should not exceed a certain percentage of the mixture. The data of a considerable number of analyses showing the percentage composition and specific gravities of both original acids and spent acids from the gun-cotton manufacture was given, and the differences between the amounts of sulphuric acid in the different operations was seen to be remarkably constant, showing the mixture to be well proportioned for this purpose. Observations were made on the permanency of composition of the mixed acids stored in darkness and in sunlight; on the color of the acids as a criterion of the amount of nitrogen oxides present; on the change of color produced by heating them; on the freezing of the acids and the rate of expansion of different mixtures. The specific-gravity bottle used, which was devised by Professor Barker, and which was particularly adapted to this work, was exhibited.

WILLIAM H. KRUG,
Secretary.

HARVARD UNIVERSITY: STUDENTS' GEOLOGICAL CLUB, DECEMBER 6, 1898.

MR. P. S. SMITH described 'An Occurrence of Corundum in Kyanite.' This paper will be published soon in full. Mr. J. M. Boutwell spoke on 'Tides: Their Character and Cause.' After reviewing our incomplete knowledge of tides in the open ocean, he explained a method of expressing, with plotted curves, certain facts

obtained from observations on tides, as they traverse continental shelves and estuaries. These curves show a perfect homology between wind waves and true tidal waves in form, range, length (better termed breadth) and velocity. Under the cause of tides, the main points of the explanation advocated by Hagen, Airy, Darwin and others were presented.

Geological Conference, December 13, 1898.—In a communication entitled 'Dikes and Veins,' Professor Shaler considered the origin of fissures occupied by these bodies. Field observation near the Spokane Placer, Montana, shows that intrusives part rocks along bedding planes more readily than transverse to them. Professor Shaler suggests that water, mechanically included in beds at the time of their deposition, becomes heated by an approaching, intrusive mass; and that by expanding it opens the way for the intrusion along previously existing, structural planes. According to this theory, in a region where the intrusives are of different age, the earliest intrusive should show evidence of its easy entrance along fissures opened by expanded water; and subsequent intrusives should exhibit signs of more difficult entrance, owing to the exhaustion of assisting waters.

Mr. Robert DeC. Ward presented 'Some Observations on the Médanos of Peru,' which will be published in a future issue of this JOURNAL.

J. M. BOUTWELL,
Recording Secretary.

TORREY BOTANICAL CLUB, NOVEMBER 30, 1898.

ON discussion of enlargement of the program for excursions, it was arranged that field meetings be provided on Saturdays after the first of January, for the purpose of studies of cryptogams and of winter stages of higher plants.

The first paper was by Mr. Marshall A. Howe, 'Remarks on some Undescribed Californian Hepaticæ,' and consisted of the description of three new species, soon to be published. Beautiful plates illustrating these species were exhibited, the work of Mr. Howe, to form part of the forthcoming volume of the Memoirs of the Torrey Club.

The second paper was by Professor Francis E. Lloyd, on 'The Nucleus in Certain Myxo-

HARVARD UNIVERSITY: STUDENTS' GEOLOGICAL CLUB, DECEMBER 6, 1898

J. M. Boutwell

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