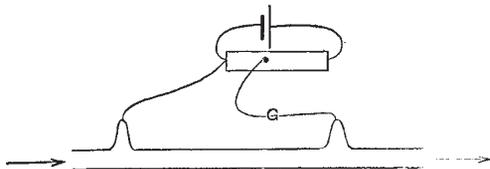


tions above mentioned are suitable for the measurement of such currents as 10 amperes.

Another method, available with the strong currents which are now common, depends upon Faraday's discovery of the rotation of the plane of polarisation by magnetic force. Gordon found  $15^\circ$  as the rotation due to the reversal of a current of 4 amperes circulating about 1000 times round a column of bisulphide of carbon. With heavy glass, which is more convenient in ordinary use, the rotation is somewhat greater. With a coil of 100 windings we should obtain  $15^\circ$  with a current of 40 amperes; and this rotation may easily be tripled by causing the light to



traverse the column three times, or, what is desirable with so strong a current, the thickness of the wire may be increased and the number of windings reduced. With the best optical arrangements the rotation can be determined to one or two minutes, but in an instrument intended for practical use such a degree of delicacy is not available. One difficulty arises from the depolarising properties of most specimens of heavy glass. Arrangements are in progress for a redetermination of the rotation in bisulphide of carbon.

RAYLEIGH

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—In spite of the large majority in favour of the preamble of the statute allowing women to enter for certain University Examinations, the statute was again opposed on March 11, on being brought up by Council after amendment. After a lengthy debate, the statute was carried by 107 against 72. The chief arguments used against the measure were based on the alleged unfairness to men in allowing women to compete under no restrictions of time and residence, and for portions only of any examination; and on the evil to the health of women which might arise from their competing with men. Mr. Pelham, of Exeter, pointed out that the statute was not one to confer degrees upon women, but to make Oxford an examining body for the various centres of female education in England, and enable it to confer certificates which would have a recognised value. Mr. Sedgwick read letters from the heads of Newnham and Girton, at Cambridge, showing that the health of the students was excellent.

#### SCIENTIFIC SERIALS

THE *American Journal of Science*, February.—Examination of Alfred R. Wallace's modification of the physical theory of secular changes of climate, by James Croll. While agreeing with much that has been advanced by Wallace in his "Island Life," in explanation of geological climate, the author fails to perceive that any of the arguments or considerations there adduced materially affect his own theory as advocated in "Climate and Time." He still holds that with the present distribution of land and water, without calling in the aid of any other geographical conditions than now obtain, the physical agencies detailed in "Climate and Time" are sufficient to account for all the phenomena of the Glacial epoch, including those intercalated warm periods, during which Greenland would probably be free from ice, and the Arctic regions enjoying a mild climate.—Communications from the United States Geological Survey, Rocky Mountain division, No. v.; on sanidine and topaz, &c., in the nevadite of Chalk Mountain, Colorado, by Whitman Cross. The sanidine crystals contain gas inclusions, but no fluids, and the topaz, elsewhere found only in granite, gneiss, or other metamorphic or crystalline schists, here occurs in an eruptive rock probably of early Tertiary age.—On the occurrence of the Lower

<sup>1</sup> January, 1884. In a note recently communicated to the Royal Society (*Proceedings*, November 15, 1883) Mr. Gordon points out that, owing to an error in reduction, the number given by him for the value of Verdet's constant is twice as great as it should be. The rotations above mentioned must therefore be halved, a correction which diminishes materially the prospect of constructing a useful instrument upon this principle.

Burlington limestone in New Mexico, by Frank Springer. The observations made by the author in 1882 in the Lake Valley Mining District, Southern New Mexico, have brought to light numerous facts confirming the views of the Burlington geologists regarding the distinct character of the upper and lower sub-carboniferous groups in that district, but demonstrating that the Lower Burlington limestone has a much wider geographical range than had hitherto been suspected.—The Minnesota Valley in the Ice Age (concluded, with two maps), by Warren Upham.—Glacial drift in Montana and Dakota, by Charles A. White. The author, who had already determined the presence of true northern Glacial drift in the region about the Lower Yellowstone River, now traces the same drift much further west. His observations were mainly confined to the Missouri Valley, but also reached to the vicinity of the Great Paw Mountains, extending for over a thousand miles at intervals from the Great Falls of the Missouri to Bismarck in Dakota.—Phenomena of the Glacial and Champlain periods about the mouth of the Connecticut Valley, that is, in the New Haven region (with two plates), by James D. Dana. The author concludes that during the Ice period the Mill River channel was excavated or deepened by glacier action. This channel, as it widened southwards below the mouth of the Pine Marsh Creek, became partly obstructed by sand-bars, which increased as the flood made progress, and ultimately merged in the wide terrace formation of the New Haven plain.—Supplement to paper on the paramorphic origin of the hornblende of the crystalline rocks of the North-Western States, by R. D. Irving.—On herderite, a glucinum calcium phosphate and fluoride from Oxford County, Maine, by William Earl Hidden and James B. Mackintosh.—Note on the decay of rocks in Brazil, by Orville A. Derby.

*Bulletin de l'Académie Royale de Belgique*, December 1, 1883.—Note on the presence of erratic boulders on the Belgian lowlands, by M. E. Delvaux. From the blocks of Scandinavian granites found at Limburg, in East Flanders, at Wachtebeke, and other places, the author concludes that during the Ice Age glaciation extended over the whole of the Netherlands, Belgium, and the shallow or exposed lands now flooded by the North Sea, terminating on the plains of Norfolk and Suffolk.—On amygdaline and germination, by M. A. Jorissen.—On the scintillation of the stars, in connection with the constitution of their light as revealed by spectrum analysis, by M. Ch. Montigny. The author's spectroscopic studies lead to the conclusion that those stars sparkle most whose spectra present the fewest bands, scintillation being weakest in those whose spectra are marked by broad dark bands.—On the fossil remains of *Sphargis rupeliensis* discovered in the brick clay of the Waas district, by P. J. van Beneden.—Note on a new differential dilatometer and its application to the study of the expansion of alums under the action of heat (one illustration), by W. Spring.—Some experiments on thin liquid layers of glycerine prepared from the oleate of sodium, by J. Plateau.—On the false appearances of aurora borealis observed in Belgium during the month of November 1883, by F. Terby.—Note on the anatomy and histology of a *Turbellaria rhabdocelis* (three illustrations), by P. Francotte.—On the laws regulating the proprietary rights of authors of musical and dramatical works in Belgium, by M. Cattraux.—An historical study of the reformer Froment and his first wife, Marie d'Ennetières, by M. Jules Vuij.—On a Society of Lawyers that flourished in Brussels during a great part of the eighteenth century, by Louis Hymans.—Remarks on the present state of music in the chief cities of Central Europe, by X. van Elewycq.—Generalisation of a property of surfaces of the second order, by M. Jamet.—Appearance of the satellites of Jupiter during the night of October 14, 1883, by F. Terby.—Note on the parallax of the sun deduced from the micrometric observations made at the Belgian stations during the transit of Venus on December 6, 1882, by means of specially constructed heliometers, by J. C. Houzeau.—Contributions to the history of the ovum; indirect relation of the germinative vesicle to the periphery of the vitellus (twelve illustrations), by Ch. van Bambeke.—Remarks on the study of biology and natural history in Belgium, by M. Ed. van Beneden.—On the salient features of the beds of the great marine basins, by M. A. Renard.

*Atti della R. Accademia dei Lincei*, December 16, 1883.—Notice of G. Orano's treatise on "Habitual Criminals," by S. Ferri.—On the causes of the retirement of the Alpine glaciers, by Roberto Paolo. The author concludes that the glaciers were developed under a mean summer temperature lower than at