including in Volume 27 of the *Bulletin*, 666 pages and 33 plates, and including Volume 9 of the *Memoirs*, with 292 pages and 9 plates. The articles printed in the *Bulletin* have numbered 63, by 48 different persons; 19 articles have contained descriptions of new species among the higher plants.

The Club voted to begin the publication of an additional monthly of about 12 pages, to include botanical notes and jottings, with reference to the local flora and to other subjects, and to bear the name *Torreya*, in honor of Dr. John Torrey, founder of the Club. Dr. M. A. Howe was made editor. The pressure of more extended technical matter upon the pages of the *Torrey Bulletin* has so far developed as to crowd out minor and more popular notes, and it was thought desirable to provide an opportunity for them by the establishment of this new journal, *Torreya*, which will be sent free to all Club members; to others at one dollar.

The officers elected for 1901 include the following: *President*, Hon. Addison Brown; *Treasurer*, Dr. H. B. Ferguson; *Recording Secretary*, Professor E. S. Burgess; *Editor*, Professor L. M. Underwood; *Associate Editors*, Dr. C. C. Curtis, Dr. M. A. Howe, Professor F. L. Lloyd, Dr. D. T. MacDougal, Dr. H. M. Richards, Miss Anna Murray Vail, Dr. N. L. Britton.

Recent papers read include Mr. J. E. Kirkwood's studies on the embryology of the Cucurbitaceae, the types selected for comparison being *Sicyos angulatus*, L., *Micrampelis lobata* (Michx.) Greene, and *Mornordica charanta*, L. These three types resemble one another in some features of their earlier development; in each case a cup-like structure is formed on the inner side of which the ovules are differentiated. In each case the normal definite embroyo-sac is a typical one. Some ovules of *Sicyos* exhibited an embryo-sac abnormally developed. Endosperm is formed soon after fertilization, and seems to have the function of digesting the tissue of the nucellus and supplying the young embryo with food material. No suspensor was found in *Sicyos*, but in *Micrampelis* and *Mornordica* it is usually formed with two or three cells.

Edward S. Burgess,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE SUPPOSED TERTIARY SEA OF SOUTHERN BRAZIL.

In an article entitled 'The History of the Neotropical Region,' published in No. 310 (Dec. 7, 1900) of Science, Dr. H. von Ihering, in order to account for certain zoogeographical facts reported by him, proposes the somewhat startling hypothesis of a tertiary sea separating two faunal sub-regions that he denominates 'Archiplata' and 'Archamazonia,' and gives the purely zoological evidence as sufficient, in his opinion, to positively establish the existence of this important geological feature. As the boundaries of these faunal sub-regions are not clearly defined the position of this sea remains doubtful, but from the context it is clear that it must have tied in with the known marine tertiary deposits of the Argentine province of Entre Rios and extended across the present mass of Brazilian highlands in such a way as to leave in the southern division a great part, if not all, of the States of Rio Grande do Sul and Santa Catharina, that is to say, in some part of the present basin of the Rio Uruguay.

Unfortunately our knowledge of the geological structure of this portion of Braziliian territory is extremely defective, but enough is known to make it certain that a presumably pre-tertiary formation stretches entirely across the region in question and thus far no geological observations or topographical features are known that suggest the slightest suspicion of any important break in its continuity. This is a formation characterized, like the triassic belt of eastern North America which it much resembles, by dykes, intercallated sheets and outflows of trappean rocks (diabase-porphyrite of Rosenbusch) of very uniform mineralogical composition, but very varied physical structure and aspect, by means of which it can readily be traced. Its geological age is undetermined, except that it is almost certainly post-paleozoic, since it overlies permian beds containing the Glossopteris flora. From this circumstance and from the strong resemblance to the above mentioned North American region, it has generally been referred to the triassic, though there is nothing to prove that it might not be cretaceous

or even tertiary. To refer it to the latter age would not, however, help the hypothesis here discussed, since there is no evidence whatever of its being of marine origin, and its northward extension well into the heart of central Brazil makes it embrace a very considerable portion of the Archamazonia faunal region of Dr. von Ihering.

The heavy trap dykes and sheets of this formation give very marked topographical features (lines of escarpments and obstructions in rivers) by which it can be traced even in regions that have not been geologically examined, and for some years I have occupied myself in tracing its distribution through such chance information and specimens as were obtainable from regions not personally known to me. Particularly valuable for this purpose was the material which for years has been accumulating in the Museum National of Rio de Janeiro and which for the region under discussion is especially important and authentic, since it contains a complete duplication of the material collected by Sellow on which Weiss' paper, the most important that has yet appeared on the geology of Rio Grande do Sul and Uruguay, was based. Without going into detail, suffice it to say that there is evidence that I consider sufficient to establish the general fact that this formation extends without a break and in the form of a great tableland, from 600 to 1,000 meters high, from near the headwaters of the Paraná in southern Goyaz and western Minas Geræs to the line of escarped hills that cross nearly in the middle, the State of Rio Grande do Sul from east to west. To the south of this line, which seems to be a giant fault, the formation lies lower and has been much denuded, so that it is frequently interrupted by areas of older rocks appearing from underneath, but thus far no evidence whatever has been presented of the occurrence of any overlying formation of marine origin.

Of special significance for our present purpose is the fact that the falls and rapids of the river Uruguay, down to the Brazilian limit and beyond, are composed of the hard traps of this formation which would thus present a barrier to the sea which in tertiary times undoubtedly occupied a part of the Argentine province of Entre Rios. The only point where the deposits of this sea are known to extend to the eastern bank of the Uruguay is near the town of Colonia, too far south to suit the hypothesis here discussed. Topographically considered, the only line in which there was a possibility of a break across this barrier is a depressed area in front of the above mentioned line of escarpments, occupied by parts of the valleys of the rivers Ybicuhy, flowing westward to the Uruguay, and Jacuhy, flowing eastward to the Atlantic. These two valleys are, however, separated by a considerable spur that unites like an isthmus the highlands of the upper Uruguay basin with those of southern Rio Grande do Sul and Uruguay. Thus far no evidence has been presented that this isthmus was ever submerged, or that the depressed portions of the Ybicuhy and Jacuhy valleys are occupied by other than fluvial deposits. It is quite possible that in secondary or tertiary times an arm of the sea may have extended into the region of the lower part of the present Jacuhy valley, but if so there is slight probability that it extended westward into those of the Ybicuhy and Uruguay, and even if such a connection be admitted it could only have been a narrow strait quite incapable of producing the 'collosal' faunal difference that it is attempted to explain. Speculation as to the probable existence of this strait is, moreover, quite gratuitous, since, if I rightly understand Dr. von Ihering, its position is entirely within his Archiplata sub-region.

ORVIILLE A. DERBY.

SÃO PAULO, BRAZIL,
Jan. 8, 1901.

GEOLOGICAL MAP OF EUROPE.

WHAT has become of it? Why does Dietrich Reimer not publish it?

WM. A. INGHAM,
Ex-Secretary Penna. Geol. Survey.

NOTES ON INORGANIC CHEMISTRY.

ROCK FORMATION.

AN important contribution to the study of solid solutions has been made by Professor W. Spring in the *Revue Générale des Sciences*, under the title of 'The Plasticity of Solid Bodies and