tender profuse apologies for my awkwardness in translating Herr Reymond's verses. Rhyme and rhythm are very much out of my line.

On page 119 of the first volume in the section "Vom Moner bis zur Gastraèa," Moner sings, to the melody of "Ich bin der alte Ahasver;

I am an ancient Moneron,
Derived by chance from carbon;
Dredged up from darkest of deep seas
To pose with science' garb on.

I am an ancient Moneron,
All organs sadly lacking;
No eyes or ears nor limber tongue
To keep forever clacking.

I am an ancient Moneron
Given o'er to multiplying.
O, would I had some power beside,
E'en were it that of dying!

And then Amœba comes forward and sings, to the tune of "'S ist kein schöner Leben als Studentenleben."

O, what a happy family
Are we minute Amœbæ!
In stagnant pools and slimy wells
We lay our courses creepy.

When we divide, we must endure
A protoplasmic spasm,
For unlike Moneron we have
A nucleus; quite a chasm!
Yet still we lack what we should like,
Our lowly life to aid in,
For each a kindly-hearted, fair
And true Amœba-maiden!

And so on for a score more of lines, ending with "Das Amoebenthum, es lebe hoch!"

At the end of the second volume a picture is given of the old theater *Diener* sweeping out the broken and used up properties of the play, and soliloquizing thus, as epilogue:

Completed is the comedy;
The actors pass, to no one's sorrow;
The old world stands in its same place,
And other prophets come to-morrow.

Vernon L. Kellogg
Stanford University, Cal.

A CORAL ISLAND MODEL

It is announced in the Harvard University *Gazette* that a large naturalistic model of Bora Bora, one of the Society Islands in the South Pacific Ocean, has recently been added to the exhibits in the coral room of the Museum of Comparative Zoology. The model is the gift of Mr. Alexander Agassiz and the work of Mr. George C. Curtis, whose model of the metropolitan district around Boston, in another room, is already well known to visitors to the museum. Mr. Curtis visited Bora Bora in 1904, at the suggestion of Mr. Agassiz, and spent several months there making surveys, soundings, photographs, and sketches, the results of which are now shown in the model. It is on a scale of about one and a half feet to a mile, horizontal and vertical alike, and is painted in natural colors. The central island, peopled by about 2,000 native Polynesians, is about five by three miles in diameter. It is the dissected upper portion of a great volcanic cone that here rises from the deep sea floor; a steep-walled central knob standing about 2,500 feet over sea level, and surmounting a group of radiating spurs. The foot of the heavily wooded lower slopes is lapped by the quiet waters of the lagoon, where the blue water is some fifty fathoms deep. Communication with the sea is maintained by a passage through the outlying shoals and the narrow barrier reef which forms the exterior border of the concentric island system. A little farther out the sea bottom deepens rapidly at an angle of nearly 45 degrees, and thus soon descends to a depth of 2,000 fathoms or more. The deep ocean floor would, on the scale of the model, be reached near the level of the floor of the coral room. The ocean depths immediately surrounding the reef are well suggested by the dark blue color of the outer submarine slope and by the device of placing models of vessels at sea level on fine wire supports which are hardly visible a few feet away. The use of natural colors and true proportions throughout the model makes it highly effective. By placing the eye at sea level a most realistic view of the island may be gained; the line of breakers on the outer barrier reef; the sails of boats in the lagoon, their hulls hidden by groves of palm trees; the villages at the foot

of the inner mountainous island; the lower wooded slopes; and, dominating all, the central, gray-white peak.

WORK OF THE COAST AND GEODETIC SURVEY

THE report itself must be consulted for the details of the extensive cartographic work of the Bureau in the United States proper, Alaska, Porto Rico and the Philippines, as well as for the account of the progress of the primary triangulation and leveling of precision. In all these branches of the work great activity prevailed and notable results were achieved during the year.

Certain important work of the survey receives bare mention, as for instance the results of the investigation of the earth's figure based on geodetic operations in the United States. This is owing to the fact that these results were communicated to the International Geodetic Association in a preliminary report which has been published.

Appendix 1 gives the details of field operations, and Appendix 2, the details of office work. Five other appendixes form valuable discussions of interesting subjects.

Soon after the California earthquake of April 18, 1906, it became evident that the permanent horizontal displacements of large areas covered by triangulation in California had so changed the lengths and directions of the lines joining the triangulation stations as greatly to diminish the value of the triangulation for its primary purposes as a framework for future surveys. During the year, therefore, new triangulation extending from Point Arena to stations south of Monterey Bay was done, which serves to restore the value of the old triangulation by determining the new positions of 61 of the old triangulation stations. The triangulation included the Farallen Light House, 22 miles to the westward of the great fault accompanying the earthquake, and the stations Mocho and Mount Diablo, 33 miles to the eastward of the fault. The new triangulation serves to trace the permanent distortions and displacements of the earth's crust for many miles back from the fault in each direction and to show that they follow certain regular laws. This is the most extensive and accurate determination by triangulation of the effects of an earthquake which has yet been made anywhere in the world. Appendix 3 is a full report upon this investigation.

A full report on the measurement of six primary bases with steel and invar tapes in 1906 is printed as Appendix 4. The invar (nickel steel) tapes have a coefficient of expansion about one twenty-eighth that of steel tapes, hence it is much less difficult to keep the temperature errors within the required limit with invar tapes than with steel tapes. Invar tapes had not been used in the United States until 1906 in primary base measurements. The thorough tests of these tapes, made by using them on six bases in conjunction with the steel tapes formerly used, showed that measurements may be made more conveniently, accurately, and at smaller cost per mile than with the steel tapes, and that the invar tapes are sufficiently durable and stable for safe field use. This demonstration is believed to be a distinct step in advance in base measurement.

The steady progress in the magnetic survey of the United States and accumulation of magnetic observational data, as mentioned in Appendix 5 of the report, should be of special interest to the surveyor and the navigator, as well as to those pursuing the study of the science of terrestrial magnetism. Throughout the year the measurements of the earth's magnetism were made at places distributed over a majority of the states and territories of the United States and at numerous places at sea along the Atlantic and Pacific coasts of North and South America, and in Porto Rico and the Philippines. Important information was secured in the equatorial regions. Numerous "repeat" observations were made throughout the country in order to follow as closely as possible the secular change in the magnetic elements. Five magnetic observatories were maintained in continuous operation and important seismological data were also obtained. The facilities of the