nearly horizontal strata) of the Brazilian plateau are those of the Paraná, Amazonas, São Francisco, and Parnahyba basins. That of the Paraná basin, which may be considered as embracing the Uruguay, includes a large portion of the provinces of Rio Grande do Sul, Santa Catharina, Paraná, and São Paulo; a small part of south-western Minas Geraes and southern Goyaz; and the elevated portion of the province of Matto Grosso, and of the republic of Paraguay, lying between the Paraná and Paraguay. The maximum elevation along the eastern border in the provinces of Paraná and São Paulo is approximately 1,000 metres, the general level becoming a few hundred metres lower to the southward and westward, as the result not only of denudation, but also of a general lowering of the surface.

The Amazonian tableland includes the greater part of the provinces of Matto Grosso and Goyaz, a large part of southern Pará, and relatively small portions of south-eastern Amazonas and western Maranhão. It is drained by the Tocantins-Araguaya, Xingú, Tapajós, and lower Madeira, with its tributary the Guaporé, all of which descend from the tableland in a series of rapids, at a distance of from 100 to 200 miles from the Amazonas. The southern margin of this great tableland — an escarpment rising to between 800 and 1,000 metres above the level of the sea, and facing the depression of the Paraguay and Guaporé — has received the name of Serra dos Parecis.

The São Francisco tableland lies mainly to the west of that river, in the western part of the provinces of Minas Geraes and Bahia, and rises to the height of about 800 metres. It is doubtful whether or not it extends over the watershed, so as to be continuous with those of the Tocantins and Parnahyba valleys. The latter occupies all, or nearly all, of the province of Piauhy, and a portion of southern Maranhão and western Ceará, and is perhaps continuous with the Amazonian tableland along the Tocantins divide.

All of these tablelands are deeply cut by numerous river-valleys so as to present almost everywhere a mountainous aspect; and the ridges formed by denudation are generally spoken of as mountains, and are represented as such on all maps of the empire.

The Brazilian portion of the Guiana plateau is very imperfectly known. Along the watershed between the Amazonas and the rivers flowing to the Caribbean Sea there are mountains whose culminating points are said to rise to the elevation of 2,000 metres or more; and spurs of high lands extend to within a few miles of the Amazonas at several points between the mouth of the Rio Negro and the sea. This region is drained by the Rio Negro, with its tributary the Rio Branco, and a number of smaller rivers, among which the Jamundá, Trombetas, Parú, Jary, and Araguary are the most important.

The great Amazonian depression is relatively narrow along the lower river, below the mouth of the Rio Negro, the average width being probably between 100 and 200 miles. Above the Rio Negro and Madeira, in the province of Amazonas, it widens considerably, so that it presents a bottle or flask shape. The river is generally bordered by low alluvial plains, often of considerable width, which are subject to overflow, and are full of lakes and anastomosing side-channels of the great river, or of the lower courses of its tributaries. The higher lands are either tablelands less than 300 metres in height, formed by deposits peculiar to the depression, or denuded outliers of the margins of the great continental plateaus on either side, or of the Andean plateau at the head of the basin.

The Brazilian part of the Paraguay depression is the upper portion of the immense plains of the basin of that river, which form a large part of the Argentine Republic, Paraguay, and eastern Bolivia. These plains lie several hundred metres lower than the lands of the plateau that encircle them, and of its numerous spurs and outliers. They are, for the most part, but slightly elevated above the level of the rivers (the upper Paraguay and its tributaries) that traverse them, and, during the wet season, become transformed into immense lakes and marshes.

The Atlantic border-region consists of a zone, generally only a few miles in width, lying between the coast and the margin of the continental plateau. South of Rio de Janeiro it is constituted by low sand-plains full of lagoons, and by denuded spurs and outliers of the plateau. North of Rio de Janeiro there are in many places, in addition to these, hills and tablelands of formations peculiar to this coast-belt, which rise to a height of from 100 to 200 metres.

O. A. DERBY.

THE LAST CRUISE OF THE ALBATROSS IN THE GULF OF MEXICO.

ACCORDING to a late report by Lieut.-Commander Z. L. Tanner, U.S.N., commanding the U. S. fish-commission steamer Albatross, dated at New Orleans, Feb. 13, the recent short cruise of that vessel has been productive of some interesting results.

The Albatross left Washington on the afternoon of the day before Christmas (1884), and after some delay by ice in the river, and by rough weather in Chesapeake Bay, arrived at Norfolk on the morning of the 26th. Having taken in coal at Norfolk, and received the party of naturalists detailed for the cruise,[1] she put to sea on the afternoon of Jan. 3 (1885), bound for Key West. At starting, the very unusually high barometer of 31.10 was noted; but the glass began falling early next morning, with the setting-in of a smart south-east gale and heavy sea. On the 6th, the weather having moderated, a trawl-line was set for tile-fish, in 79 fathoms, off the Carolina coast, but without result. Four hauls with the beam-trawl, with wing-nets and mud-bags, in about the same locality, were more productive, bringing up many familiar species, and some new to the ship.

[1] Mr. J. E. Benedict (in charge), Capt. J. W. Collins, Dr. Tarleton H. Bean, and Mr. Thomas Lee.

A sharp gale from the southward, and heavy sea, now set in, preventing further work; and, after waiting two days for the weather to moderate, the Albatross proceeded on her way, taking several king-fish with trolling-lines as she passed along the Florida reefs. Having taken in coal at Key West, she sailed on the 15th for Havana, where she arrived the next day. Notwithstanding the rough and uneven bottom, several hauls were made with the beam-trawl in 37 fathoms, on the afternoon of the 15th, with excellent results. The next five days were occupied in daily trips out of Havana, and the constant use of the tangles and beam-trawl upon the 'Pentacrinus' ground. Thirty-two hauls, in all, were made, bringing up a large supply of sea-lilies, besides an immense variety of other things, and one specimen of sea-lily supposed to represent a new genus.

Leaving Havana on the 20th, the surface tow-net was put over on two successive evenings just after dark, with poor results, there being very little surface life. On the 21st two hauls (beam-trawl) were made in 426 and 423 fathoms, north of the western end of Cuba, with fair results, notwithstanding coral patches on the bottom. Two wrecks, one a Spanish man-of-war, were seen on Colorado reefs. On the 22d sent down tangles, and afterward small beam-trawl, in 167 fathoms, off the eastern end of Arrowsmith Banks, with excellent results, including many forms unknown to those on board.

After a week spent in studying the fauna of Cozumel Island, off the east coast of Yucatan, the Albatross, on the 29th, visited the south-west end of the island; and, while the gunning and seining parties went ashore, the ship stood off shore, and took two hauls each with the trawl and with tangles in from 137 to 231 fathoms. The tangles brought up many forms new to the party, but the trawls were not successful. Having picked up the shore parties, the ship stood away for the Campeache Banks, and made seven hauls with the beam-trawl, getting many forms new to those on board, besides using the tangles and hand-lines. It had been intended to remain here for several days; but the occurrence of a case of typhoid-fever on board made it desirable to get the sick man into hospital as soon as possible, and Pensacola was headed for as the nearest. There coal was taken aboard, the sick man landed, and the ship sailed again, Feb. 5, to explore the banks off Cape San Blas. On the way out from Pensacola, the three-masted schooner, Fanny Whitman, of Rockland, Me., was discovered ashore in a dangerous position, with distress-signals flying. She was towed off and set afloat; and on the 7th, fishing-lines, tangles, and trawls were put over on the banks (27 fathoms) with satisfactory results. Red groupers were found with ovaries distended, but none fully ripe. Returning to Pensacola on the 9th, the ship sailed again for New Orleans on the 10th, taking soundings every five miles from latitude 29° 27′ north, longitude 87° 44′ west, in a south-south-west direction, to latitude 25° 54′ north, longitude 88° 2′ west (698 fathoms), and running other lines in various directions, east and west, without finding any bank or shoal, and generally confirming the soundings of the coast-survey chart. Three hauls of the beam-trawl, bringing up many specimens unknown to those on board, were made about latitude 29° 10′ north, longitude 88° 15′ west. This locality was found to be so promising, that it will be revisited hereafter.

After running another line of soundings in the direction of New Orleans, the Albatross came to anchor off Algiers on the morning of the 13th of February.

TECHNICAL INSTRUCTION IN AMERICA.

Royal commissioners were appointed in England on Aug. 25, 1882, "to inquire into the instruction of the industrial classes of certain foreign countries in technical and other subjects," and "into the influence of such instruction on manufacturing and other industries at home and abroad." A thin octavo report issued in 1882, and a very voluminous report issued in 1884, contain the results of the investigations of the commission. In vol. ii. of the second report is contained the report on technical education in Canada and the United States, compiled by Mr. William Mather of Salford, Eng., a well-known manufacturer, who has indicated his enthusiasm for technical instruction by the establishment of a well-equipped school for apprentices employed at his works.

Mr. Mather arrived in New York on May 23, 1883, and, after a six-months' tour through the states and the British possessions, returned to England on Nov. 1, in the same year. Special inquiries were made by him upon the subject of technical and industrial education in twenty-two different cities, including San Francisco, Richmond, and the most important intervening cities. Not less than one hundred educational institutions and manufacturing establishments were visited, but reports were made only upon the typical institutions visited. Mr. Mather has divided the results of his inquiries into four parts:—

1°. A general view of the public schools in cities and counties, and a description of the scientific training in the colleges and universities in the various states.

2°. The technical, industrial, and manual training-schools and art-schools.

3°. The effect of these institutions on the industries of the country, through the intelligence of the proprietors, foremen, and work-people.

4°. The influences and institutions, other than schools, tending to the advancement and improvement of the industrial population.

There is also an appendix to the report, containing statistical information, letters from prominent educators, and abstracts of methods of instruction in different places.

Second report of the royal commissioners on technical instruction. Vol. ii. No. 2. Report on technical education in the United States of America and Canada. By William Mather. London, *Eyre & Spottiswoode*, 1884.