

3. The region of maximum height has no gyratory motion.
4. The inner part will gyrate from right to left in the northern hemisphere.
5. The outer part will gyrate from left to right.
6. In the southern hemisphere the direction of gyration will be reversed.
7. The whole mass will have a tendency to move toward the north or toward the south according as it gyrates from right to left or from left to right.
8. If a body move in any direction on the surface of the earth it will be deflected to the right in the northern hemisphere, and to the left in the southern hemisphere, by reason of the earth's rotation.

These results are greatly modified when friction and varying density are considered. Still the general character of the results remains. There are small depressions at the poles and equator; near the poles the prevailing direction of the motions of the atmosphere is towards the east, in the torrid zone toward the west; there are regions of calms at the poles and near the equator; there are also belts of calms, but they are in latitude about 30° instead of 35° ; there is an accumulation of air at the tropical belts the outflow of which, uniting with the westerly and easterly motions of the atmosphere, produces the north-east trade winds of the northern hemisphere and the south-west currents of the temperate zone, and also the corresponding winds of the southern hemisphere.

Local movements are also modified, by reason of the same causes, from the theoretical deductions of Ferrel. Whenever there is local rarefaction an upper current is produced. From all sides, currents set in towards this centre, of low barometric pressure, but in the northern hemisphere are deflected to the right. There being less resistance in the upper strata, a rapid gyratory motion begins there but immediately descends towards the earth. The most rapid motion is on the outer limit of a centre of calm caused by resistance. The contrary gyration of the outer part, indicated by theory, is destroyed by friction. The gyration will be from right to left in the northern hemisphere, and from left to right in the southern. The motion of gyrating mass will be north-west to the zone of calms and then north-east in the northern hemisphere; and south-west and south-east in the southern hemisphere. There can be no cyclones at the equator since there can be no gyratory motion. In the case of small areas of disturbance, the rotation of the earth has less influence in determining the direction of rotation than the initial condition of the atmosphere. Hence tornadoes rotate in a direction determined by the condition of the atmosphere; hence also there may be tornadoes at the equator. Tornadoes run into belts of low barometric pressure and are soon overcome by friction. The low barometer in tornadoes and cyclones is due to two causes—the rarefied condition, and the centrifugal force caused by the rapid motion of the particles of air near the centre. The wind moves in a descending spiral externally, and an ascending spiral internally. The velocity of rotation increases toward the centre of the storm, particles of air describing equal areas about this centre, in equal times. The descending spiral is an involute, the ascending an evolute, owing to the increased pressure of the air in approaching the earth. The axis of rotation generally bends in the direction the tempest takes because of friction at the surface of the earth.—*J. N. Fradenburgh in N. Y. State Educational Journal.*

THE SIZE OF COUNTRIES.

The Red Sea would reach from Washington to Colorado, and it is three times as wide as Lake Ontario.

Madagascar is as large as New Hampshire, Massachusetts, Vermont, Connecticut, New York, Pennsylvania, New Jersey, Virginia, and North Carolina, all put together.

Palestine is one-fourth the size of New York.

Hindustan is more than a hundred times as large as Palestine.

Great Britain is two-thirds the size of Japan, one-twelfth the size of Hindustan, one-twelfth of China, and one-twenty-fifth of the United States.

Greece is about the size of Vermont.

The English Channel is nearly as large as Lake Superior, and Lake Huron is as large as the Sea of Azof.

The great Desert of Africa has nearly the present dimensions of the United States.

The Caspian Sea would stretch from New York to St. Augustine, and is as wide as from New York City to Rochester.

The following bodies of water are nearly equal in size: German Ocean, Black Sea, Yellow Sea; Hudson Bay is rather larger; the Baltic, Adriatic, Persian Gulf, and Aegean Sea, about half as large, and somewhat larger than Lake Superior.

The Mediterranean, if placed across North America, would make sea navigation from San Diego to Baltimore.

The Gulf of Mexico is about ten times the size of Lake Superior, and about as large as the Sea of Kamschatka, Bay of Bengal, China Sea, Okhotsk Sea, or Japan Sea. Lake Ontario would go into either of them more than fifty times.

Great Britain and Ireland are about as large as New Mexico, but not as large as Iowa and Nebraska. They are less than New York, Pennsylvania, and Ohio.

V. Biographical Sketches.

REV. JAMES PORTER.

On the 18th of April, 1874, entered into rest, at his residence in Toronto, aged nearly 62 years, the Rev. James Porter, Inspector of the City Public Schools. Mr. Porter was born on the 16th of May, 1812, at Highgate, near London. In 1843, he came to New Brunswick, at the call of the ancient Church in Sheffield, through the Colonial Missionary Society. In 1852, Mr. Porter was appointed Chief Superintendent of Education for the Province of New Brunswick, during the Lieutenant-Governorship of Sir Edmund Head, who, not only in that Province, but afterwards on his removal to Canada, evinced a high personal consideration for him, and took a very special interest in his work. Mr. Porter resigned the Chief Superintendency at the end of 1853, and removed to St. John, N.B., where he established a weekly newspaper, the *Free Press*; but the enterprise was not successful. In the autumn of 1854, he paid a visit to Canada, which led to his being invited to go to Windsor, C.W., as minister of a Congregational Church. After six months, however, he returned to St. John, and remained there some two years longer. In the spring of 1857, he was called to the Church at London, C.W., to which place he then removed his family. In June, 1858, he received the appointment of Local Superintendent of Public Schools for the City of Toronto, the laborious, responsible, and ever-increasing duties of which office he discharged with so great fidelity for the remainder of his days. In his office of Superintendent (now entitled Inspector), as in the discharge of all duties, public and private, Mr. Porter was distinguished by a punctilious exactitude, which made him ever prompt to the moment in all matters where time was concerned, unsparing of his own labour, and intent on performing the last jot and tittle of what was required of him, seeking no indulgence, asking no favour, until his health broke down, and even then injuring his chances of recovery by his extreme anxiety to be at his post. Of course, he expected the like fidelity in others. Yet he cherished a very warm sympathy with the toils and trials of the teachers, and manifested a never-failing courtesy in his intercourse with them, so that he was regarded on their parts not only with official respect and deference, but with strong personal attachment. This feeling manifested itself in the present of a silver tea-service, in April, 1864, in many ways during his last illness, and at his burial. The sentiment characterized the scholars of the city schools, one token of which was the frequent leaving of a bouquet at his door during the last winter, as he lay ill and dying. The sentiments of the board of School Trustees was expressed in the renewal of his appointment (which till 1871 was needful annually), in the respect always paid to his judgment, in their granting him leave of absence for four months—from April to August, 1874—(in order to allow of an unexpected visit to England), in their presence at his funeral, and in the following resolution, passed at the first meeting after his death:—"That this Board begs to record its high appreciation of the long, faithful, and efficient services of the late Rev. James Porter, as Inspector of the Public Schools of this city, and hereby tenders to the family of the reverend gentlemen its heartfelt sympathy in their sad bereavement, earnestly trusting that He who has promised to be the Husband of the widow and Father of the fatherless, will sustain and comfort them in their affliction."

He was followed to the grave by a large concourse of citizens, among whom were the Very Reverend Dean Grasett, the Rev. Dr. Ryerson, the Board of Trustees, the Teachers of the City Schools, and a deputation of the boys of each school.—*F. H. M., in Canadian Independent of May.*

S. B. FREEMAN, ESQ., Q.C.

In noticing the death of Mr. Freeman, of Hamilton, the *Spectator* says:—"He made his mark, chiefly as a lawyer, and it is no extravagance to say that in the art of examining and cross-examining