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CANADIAN ILLUSTRATED NEWS.

Montreal, Saturday, Aug. 31, 1878.

THE MARQUIS OF LORNE FROM A BRITISH STANDPOINT.

WE took the earliest occasion, while publishing full-page portraits of the Marquis of LORNE and the Princess LOUISE, to express our hearty concurrence in the appointment of the new Governor-General. Both the Canadian and British daily press have been unanimous in their approval of the nomination; and there only remained to learn the views of the great London weeklies which are justly considered the exponents of the best and most cautious British opinion. These we have just received, and, as we expected, they contain some rather curious and most instructive ideas. We have judged it would be interesting to condense them for our readers.

The *Spectator*, a Liberal organ, says that it is nothing new to find the QUEEN'S children ready to spend time and labour in the service of the State, but to leave England for some years involves many sacrifices to any one, no matter how pleasant may be the conditions under which the term of absence is to be passed, and the Princess LOUISE will not be less likely than those placed in a lower station to feel the change. To her husband, the main disadvantage of the post will be the subordination in which he will inevitably stand towards his wife. The Canadians are enthusiastically loyal, but this very quality will tend in this particular instance to make them indifferent to the Governor-General. By the side of the QUEEN'S daughter, the QUEEN'S representative will, in a sense, hold the second place. The social dignity of the one must overshadow the official dignity of the other. The Government deserves the praise which now-a-days should always be given to those who step outside the beaten track of safe appointments. The residence in Canada of a member of the Royal Family will be an experiment in Colonial administration,—an experiment which we are glad to see tried, which ought, we think, to be tried,—but not the less an experiment. It is probable that it will have the best possible influence on the relations between the Dominion and the mother-country, it will draw closer the ties which already unite the two, and set an example of new ties, which may be extended with advantage to other parts of the Empire. But while it may do all this, or rather because it may do all this, it may also do the reverse. An extraordinary appeal to Canadian loyalty cannot leave the Canadians exactly as it found them. If the result is not to bind them to us more immediately, it can hardly fail to alienate them in some degree.

The *Examiner* is curiously positive in one objection which refers to England, not to Canada. "It is not as the son and heir of the Duke of ARGYLL, but as the husband of the QUEEN'S daughter that the

Marquis of LORNE goes as our Governor to Ottawa. It is obvious that a Royal Prince, who acts as the representative of the SOVEREIGN abroad, must be far less amenable than an ordinary official to the control of Parliament. Ministers are bound under our institutions to study not only the confidence of the Legislature, but the favour of the Crown; and, so long as a Royal Governor can rely on the support of the SOVEREIGN, no Parliamentary Ministry is likely to interfere with his freedom of action, except under circumstances of extreme provocation. Supposing things go wrong, as things will go in the best regulated of colonies, and that the Governor makes a mistake, as Lord DURHAM did in Canada, or Lord ELLENBOROUGH in India, the difficulties will be materially increased. The recall of the Governor may be the one obvious remedy for the crisis; and yet to recall a Royal Prince may give umbrage to the SOVEREIGN, and thereby endanger the existence of the Ministry. In the same way, the Government may deem that a certain policy is essential to the maintenance of friendly relations between the colony and the mother-country; and yet the Prince Governor, strong in the knowledge that he is supported at home by influences independent of Ministerial vicissitudes, may pursue an entirely inconsistent policy.

To put the matter plainly, a Royal Governor must have two masters, the SOVEREIGN and the Ministry; and, as Royalty confers no privilege of accomplishing impossibilities, it is obvious that, not being able to serve both, he will serve the one to whose authority alone he owes his position. The experience of Royal Dukes as Lord High Admirals and Commanders-in-Chief has not worked satisfactorily, and yet from the nature of their duties they are far more amenable to direct Ministerial control than the Governors of remote dependencies. Altogether, the appointment of the Marquis of LORNE to the Governorship of Canada, if it means anything, means an innovation on our constitutional system, a new development of the theory of personal rule. As such, its certain disadvantages far exceed its possible advantages."

The *Saturday Review* is cynical as usual, but its views are well worth producing. It says that under some circumstances it would no doubt be hazardous to send Lord LORNE to Canada. In critical times a Governor-General has to take a line and act for himself; and, if he makes a mistake, he must, for the good of the country, be recalled and a better man sent. It is impossible that any Ministry should feel as free to recall the son-in-law of the QUEEN as to recall an ordinary Governor-General; and this curtailment of the central authority in his case is a disadvantage which in conceivable circumstances might be a serious one. But in ordinary times, now that communication with home is so rapid, the post of Governor-General is one very easy to occupy for any one with the training, the character, and the abilities of Lord LORNE. To smile and to telegraph are really the only duties which the Governor-General has to discharge. If he does both persistently, he cannot go far wrong. The smiling is the hard part. A good Governor-General must be pleasant to all men, interested in all things, and a master of the great art of seeming to receive most valuable information from persons who have nothing to tell him. He must, of course, go through some work. He must show that he has some reason to view Canadian finance with anxiety. He must make himself understand where the Pacific Railway is supposed to be going; and he must learn to support with arguments of some plausibility the statement which he will have to repeat in a thousand speeches, that Canada is the most promising country in the world. Some storms there will always be in every colonial teapot, and Lord LORNE will certainly have to face more than one Ministerial crisis. But if he is hard pressed he can always say he must consult the Crown lawyers, and meanwhile tele-

graph home for instructions. Of dangers of a more serious kind there appear to be few in Canada at present, unless the animosity of religious sects can be said to be a cause of serious danger. The two great tasks to be achieved before Canada could be as it is now have been satisfactorily achieved already. We have brought or bought ourselves into terms of cordial amity with the United States, and the different provinces have been federated into a Dominion. Lord DUFFERIN has contributed powerfully towards the attainment of these ends, and has been equally distinguished as the head of Canadian politics and the head of Canadian society. A review of his career in Canada may, however, be deferred until he has quitted the scene of his labours. At present we have to do, not with him, but with his successor; and Lord LORNE may be congratulated, not only on getting away from inactivity to an arena of exertion, and on being able to take with him a Princess, but also on having fallen on favourable times, and on having a path open to him which is seemingly as free from thorns and obstacles as any path in human life can be.

THE FORCE WHICH MOVES THE PLANETS.

In my last letter I incidentally alluded to the fact that it was the universal belief of all mankind that the constant application of some force was absolutely necessary to keep the heavenly bodies in motion. Sir Isaac Newton has however attempted to show that such an opinion is entirely erroneous.

It may be somewhat difficult, without the aid of diagrams, to give an idea of Newton's reasoning; but I will endeavour to show how he borrows force from the "bank of the infinite" to account for the constant motion of those bodies.

Let us suppose that we are situated, say ten miles above the surface of the earth, that there is no atmosphere, or anything which could offer any resistance whatever to a body in motion. Let us again suppose that a cannon ball be projected horizontally with a certain force, say in an easterly direction. Sir Isaac Newton contends that the cannon ball would be drawn out of a straight line by the force of the earth's attraction, that the cannon ball would continue to move round the earth, that it would return to the identical place from which it was projected, without the loss of any velocity whatever, and would continue to move in the same way forever. This is the monstrous principle which modern science teaches us with reference to the force which causes, or at least maintains, the motion of the planets in their respective orbits round the sun, and the motion of the satellites round their primaries. These bodies are but so many cannon balls which received their initial motion in a manner unknown to Newton or any of his followers, and yet they pretend to know the exact force with which these bodies were projected, together with that force which causes them to describe their elliptical orbits in the heavens.

It would be a scientific monstrosity if the followers of Newton would dare attempt to account for the motion of the sun on the same principle.

Newton's first law of motion asserts that "a body once set in motion and acted on by no force will move forwards in a straight line and with a uniform velocity forever." When Newton gave this law to the world, he assumed the absence of a resisting medium in space, the presence of which would necessarily act with some force on a body in motion, and thereby bring that body to rest. It is to-day an acknowledged fact that the interplanetary spaces are filled with a highly subtle matter called ether, which is the basis of the undulatory or wave theory of light. It has been shown by Encke that this subtle fluid or ether retards the motion of the comets. It is somewhat difficult to conceive how the followers of Newton can at the present day assert that this subtle fluid does not impede the motion of the planets. They contend that the comets are but clouds of dust or wreaths of smoke, and have therefore greater difficulty in pushing their way through a resisting medium than if they were composed of denser material such as the earth; that although the comets are retarded, the earth meets with no resistance whatever. They virtually assert a doctrine which is unknown to the science of physics. Force is defined to be that which tends to cause or destroy motion. It necessarily follows that if a comet is retarded in its progress, the cause of this retardation represents a certain amount of force. Will the followers of Newton favour the world with the knowledge of that mysterious principle which shields the planets from the action of this force? I challenge them to do so. We want something more than a bare assertion to establish the contrary of a physical fact which is as well known as the alphabet of the English language. It would carry me beyond the limits of a newspaper article to point out the absurdity of their reasoning. There is one fact, however, which may assist the reader to see at a glance the utter falsity of their reasoning, or rather their want of reason. Let us ad-

mit that a comet is a cloud of dust. Let us also admit that it cannot make its way through a resisting medium without the loss of time. Let us again admit that in consequence of the earth being composed of solid material, it suffers no resistance from the medium resisting the comets. The reader will notice that I have admitted every argument which they have advanced; but if I have done so, it is only for the purpose of showing how one absurdity must necessarily lead to another. Now it is well known that a cloud of dust is of greater density than the atmosphere of the earth—now if a cloud of dust, to which astronomers give the name of comet, is retarded in consequence of its lightness, why does not our atmosphere be also retarded like the comet and thereby deprive the earth of its constant companion? If the principles of Newton were true, there would not be a single drop of water on our globe, nor a molecule of atmospheric air; the latter would, like the comets, be retarded in making their way through a resisting medium, while the earth in its majesty would be pursuing its journey alone in its orbit round the sun; our atmosphere would be wandering disconsolately in the orbits of the comets. In order to give the reader an idea of the arguments which the Newtonians used at a time when they denied the existence of a subtle matter in space, I will quote from a work published in 1816, by John Bonnycastle, a mathematician, a follower and admirer of Newton; he says:—"Upon the supposition indeed of an universal plentitude, all motion would be impossible. For whatever be the nature of this *matter subtilis*, whether dense or rare, the whole must be absolutely impenetrable; and for a body to pass through such a medium would be more difficult than for it to pass through a sea of quicksilver or a rock of adamant."

When Encke announced the existence in space of a resisting medium, we were told by the astronomer Mitchell that the existence of such a medium was in direct opposition to all the received doctrines of astronomy. Sir Isaac Newton himself denied its existence; his words are:—"There is no evidence of its existence and therefore it should be rejected." If it had been known during the time of Newton that there really was in space a fluid or ether resisting the motion of the comets, I venture to assert that Newton's theory of attraction would have been stifled at its birth. The Newtonian theory was accepted upon the supposition that the interplanetary spaces were empty; it is clearly shown by Encke that space is full; it therefore necessarily follows that Newton's theory should be rejected.

Let us now return to our cannon ball. I supposed the absence of any resistance whatever. We will now suppose that there was placed in the track of the cannon ball the most subtle ether which it is possible for the mind to conceive. The cannon ball would therefore meet resistance, which would in time have the effect of arresting the progress of the ball, the inevitable result would be that the ball would fall to the ground. In like manner would the earth, the planets and satellites fall into the fiery embraces of the sun. If the theory of attraction is true, which I deny, the above are the results which would follow.

I object to Newton's first law of motion on the ground that there is an ether in space, which would act with some force on a body in motion, and consequently that so soon as the impulse which gave the body its initial motion would be dissipated or expended in overcoming the resistance which the ether would offer to its motion, the body would necessarily lose its momentum, and therefore would not, as Newton's law asserts, continue to move forever. It would therefore follow that Newton's first law should be rejected.

Even admitting that there was no ether, media, or atmosphere to resist the motion of the cannon ball, and even admitting the Newtonian principle of attraction, I hold that the ball would not move forever as asserted by the followers of Newton. In order to form a clear conception of my objection, let us suppose that the ball be projected upwards instead of horizontally. The impulse or force which the ball received would be dissipated or expended in exact ratio to the power or force which it was overcoming—thus the attraction of the earth is, according to the Newtonian principle, a force which must act constantly on the ball, while the impulse or force which the ball received was, if I may so express it, but a temporary force. So soon therefore as the force of attraction equalled the force which the ball received, the ball would cease moving upwards—would then possess the "energy of position" and fall to the ground. Again, let us suppose that the ball be projected, say at an angle of forty-five degrees, the same reasoning would hold good. The reader may pursue the enquiry degree by degree until he considers it projected in a horizontal direction. The constant force which the attraction of the earth exerts to deflect it from a straight line in a given time represents a like expenditure of force subtracted from the impulse or force which the ball received to project it, and so soon as that force became expended, it therefore follows that the ball then would possess the "energy of position" and fall to the ground.

In conclusion, I maintain that a force acting constantly is necessary to keep a body in motion forever. The heat of the sun is the force, and the subtle matter which fills the interplanetary spaces—the machinery which maintains the heavenly bodies in motion.

DUGALD MACDONALD.
Montreal, August 26th, 1878.