

the proximate principles found in animals are secreted from the blood. Hypothetical as this idea may seem, when first announced, there is one fact that throws over it an air of probability. We do know that several species of fish, by means of a galvanic arrangement in their heads, have the power of giving powerful electric shocks. The *gymnotus electricus*, or electric eel, for instance, gives a shock, according to Humboldt, powerful enough to kill a man, and by repetition even a mule, horse, &c. May not a weaker power of this sort, which is all that is necessary, be found in every animal and plant?

Galvanism, also, shows us how many metallic veins may be formed even now in the solid rocks, and how the crystals and gems dug from thence may be produced. Electro-magnetism shows us that it is only necessary to suppose the revolution of electric currents around the earth, in order to show why the magnetic needle takes a north and south direction; while thermo-electricity gives us a reason why that needle has a daily variation. In electro-magnetism, also, we find a probable solution for that most remarkable phenomenon, the aurora borealis and australis. That it is an electro-magnetic phenomenon seems proved beyond all doubt by the fact that its beautiful coruscations all radiate from one of the magnetic poles, though the precise manner in which electro-magnetic currents operate to produce it is still involved in obscurity.

After all, the instantaneous development of a very great attractive force in some electro-magnetic experiments seems to me the most marvellous effect exhibited by this science. Take, for instance, the electro-magnet, which is nothing but a bent piece of soft iron, coiled with several hundred feet of copper wire. This iron has no magnetism till the extremities of the wire are connected with the poles of a very feeble